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BULLETIN No. 66-62

QUALITY OF GROUND WATERS
IN CALIFORNIA
1961 and 1962

PART I
NORTHERN AND CENTRAL CALIFORNIA

AUGUST 1964

HUGO FISHER
Administrator
The Resources Agency

EDMUND G. BROWN
Governor
State of California

WILLIAM E. WARNE
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Alturas Basin	91	245	343
American Valley	102		350
Big Valley	93	246	344
Bridgeport Valley	177	296	407
Butte County (Sacramento Valley)	119	257	360
Butte Valley	15	198	300
Carmel Valley	81	244	341
Carson Valley	170	295	406
Clayton Valley	55	219	315
Colusa County (Sacramento Valley)	117	256	358
East Bay Area (Santa Clara Valley)	60	220	317
Eel River Valley	26	201	303
Eureka Plain	24	200	303
Fall River Valley	95	247	345
Fresno County (San Joaquin Valley)	144		383
Gilroy-Hollister Basin	76	238	334
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		<u>1961</u>	<u>1962</u>
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Livermore Valley	67	230	328
Mad River Valley	22	199	302
Madeline Plains	161	291	402
Madera County (San Joaquin Valley)	142	279	380
Merced County (San Joaquin Valley)	140	275	376
Mohawk Valley	104		350
Napa-Sonoma Valley	45	212	309
North Tahoe Valley	168	294	405
Pajaro Valley	72	235	331
Panoche Valley	153	289	399
Petaluma Valley	43	209	307
Pittsburg Plain	52	218	315
Placer County (Sacramento Valley)	125	260	363
Redding Basin	97	248	346
Round Valley	28	201	304
Sacramento County (Sacramento Valley) . . .	129	265	368
Salinas Valley	78	240	336
San Joaquin County (San Joaquin Valley) . .	135	268	370
Sanel Valley	32	203	305
Santa Clara Valley, East Bay	60	220	317
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		<u>1961</u>	<u>1962</u>
Santa Rosa Valley	37	205	
Scott River Valley	18	198	301
Shasta Valley	16	198	300
Sierra Valley	106	350	351
Smith River Plain	13	197	299
Solano County (Sacramento Valley)	131	267	369
South Bay Area (Santa Clara Valley)	64	228	326
South Tahoe Valley	166	294	405
Stanislaus County (San Joaquin Valley)	137	271	372
Suisun-Fairfield Valley	48	216	313
Surprise Valley	159	290	400
Sutter County (Sacramento Valley)	121	257	360
Tehama County (Sacramento Valley)	113	253	354
Topaz Valley	174	296	407
Truckee Valley	172	295	406
Tulare County (San Joaquin Valley)	146	281	388
Ukiah Valley	30	203	305
Upper Lake Valley	108	251	352
Ygnacio Valley	57	219	316
Yolo County (Sacramento Valley)	127	262	365
Yuba County (Sacramento Valley)	123	259	362

DEPARTMENT OF WATER RESOURCES

P. BOX 388
SACRAMENTO

June 19, 1964

Honorable Edmund G. Brown, Governor
and Members of the Legislature of
the State of California

State Water Quality Control Board

Gentlemen:

Bulletin No. 66-62 entitled, "Quality of Ground Waters in California, 1961 and 1962, Part I, Northern and Central California," presents laboratory analyses of samples collected during 1961 and 1962. The Southern California portion of this report will be published at a later date as Part II. This report considers the period from January 1961 through December 1962. It is the seventh and last of a chronological series of separate reports on monitoring the quality of the State's ground water. Beginning with samples collected in January 1963 and subsequent collections, ground water quality data will be reported in Appendix E of each annual volume of the Bulletin No. 130 series.

Ground water quality monitoring has been an active program in the Department of Water Resources since 1953 and is conducted as authorized by Section 229 of the Water Code. In 1961, 1,265 mineral analyses were made on samples of ground water from 61 monitored areas in Northern and Central California. In 1962, there were 1,381 mineral analyses from 65 monitored areas. In addition, there were 278 radiological analyses of ground water samples collected during 1961 and 1962 in Northern and Central California.

Generally, the quality of ground water in California is good and adequate for the uses made of it, although there are varied problems at many localities throughout the State. The quality of ground waters in the State in 1961 and 1962 was about the same as in previous years except for the continuing slow advance of sea water into some coastal basins.

Sincerely yours,

Director

ACKNOWLEDGMENTS

The extensive coverage of the ground water quality monitoring program, reported herein, is made possible through the cooperation of federal, state, and local agencies. The department wishes to express appreciation for the valuable assistance and cooperation received from the following agencies:

Federal Agencies

Department of the Interior
Geological Survey
Bureau of Reclamation

State Agencies

California Disaster Office, Radiological Service

County Agencies

Alameda County Flood Control and Water Conservation District
Butte County Farm Advisor
Colusa County Farm Advisor
Del Norte County Farm Advisor
Glenn County Farm Advisor
Humboldt County Farm Advisor
Kern County Farm Advisor
Kings County Farm Advisor
Madera County Farm Advisor
Mendocino County Farm Advisor
Monterey County Flood Control and Water Conservation District
Placer County Health Department
Sacramento County Farm Advisor
San Joaquin County Farm Advisor
Santa Clara Valley Water Conservation District
Shasta County Department of Water Resources
Siskiyou County Farm Advisor
Sonoma County Farm Advisor
Sonoma County Flood Control and Water Conservation District
Stanislaus County Farm Advisor
Sutter County Farm Advisor
Tehama County Farm Advisor
Tulare County Farm Advisor
Yolo County Farm Advisor
Yuba County Farm Advisor

Organized Public Agencies

Alameda County Water District
Buena Vista Water Storage District
Central California Irrigation District
Merced Irrigation District
Turlock Irrigation District

Many of the analyses presented herein were made by the United States Geological Survey, Quality of Water Branch, at its Sacramento laboratory, under provisions of a continuing cooperative agreement with the Department of Water Resources.

State of California
The Resources Agency
DEPARTMENT OF WATER RESOURCES

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HUGO FISHER, Administrator, The Resources Agency
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GROUND WATER QUALITY
MONITORING PROGRAM
1961-1962

INTRODUCTION

Bulletin No. 66-62 is the seventh in the chronological series, "Quality of Ground Waters in California," and presents ground water quality data collected during the two years, 1961 and 1962. This bulletin discusses quality characteristics of ground water throughout California and describes the monitoring program. It comments on the reliability of the data, describes procedures related to data collection and analysis, tabulates the 1961 and 1962 data, and includes plates to indicate areas of special interest. Plates are presented in this bulletin to show newly incorporated areas and to delineate significant ground water quality conditions.

This volume, Part I, presents water quality data for Northern and Central California. The area considered in Part I comprises all of Water Pollution Control Regions Nos. 1, 2, and 5, that portion of Region No. 3 north of the San Antonio-Salinas River drainage boundary, and the portion of Region No. 6 north of the northern Mono Lake drainage boundary. Part II presents water quality data for Southern California. The portion of the State covered by this volume and individual areas discussed herein are shown on Plate I, "Monitored Areas, 1961-1962."

For convenience of discussion, the monitored areas have been grouped according to water pollution control regions which in most cases have the same boundaries as major drainage basins of the State. The discussions are presented in successive order; first a discussion of statewide conditions and then discussions of the monitored areas within each water pollution control region.

A ground water quality sample represents the integrated effect of prior conditions that control the quality of ground water. The principal factors that act to control or influence the concentration and type of

constituents that are carried in solution by ground waters are hydrology and geology, the character of the resident ground water available for mixing, and, in local cases, waste discharges resulting from human activity. The objectives of the ground water quality data program are (1) to secure continuous and reliable information on the quality of ground waters throughout the State, (2) to provide information on the prevailing mineral quality of ground waters in California, and (3) to detect significant changes and trends in the quality of ground waters, to evaluate the causes for these changes, and to identify and delineate the areas affected by such changes.

Analyses of ground water quality may include mineral, trace metal, and radiological determinations. The frequency of sampling, type of analysis, and density of the sampling network for mineral tests depend on conditions in the area being monitored. In areas where water quality problems are known to exist and where extensive use is made of ground water supplies, samples are taken one or more times each year. In areas where limited use is made of ground waters, samples are taken periodically until sufficient data are collected to determine the water quality of the basin and thereafter as frequently as land development and water use warrants. Radioassays of well waters are made at regular intervals; an alternative portion of the monitoring network is tested each year. In general, only the minimum number of wells necessary to show the areal extent of problems, if any, or evaluate ground water conditions are included in the monitoring network. The department maintains a file of available ground water quality analyses. This file is open to the public and a limited number of analyses are available upon request.

Appendix A discusses evaluation of the data, describes the location designation used, and sets forth criteria and standards applicable to uses

of the sampled water. Appendixes B, C, and D tabulate mineral and radiological data for 1961 and 1962.

When establishing ground water quality data programs, requests and suggestions from regional water pollution control boards and other interested water agencies have been considered along with requirements of programs within the department. The ground water quality data program has provided assistance and gained much support from the U. S. Geological Survey and the many cooperative local agencies. Although the program was initiated by the Department of Water Resources, the present scope of the program could not have been achieved without the valuable assistance of these other agencies.

Authorization

The ground water quality monitoring program is authorized in Section 229 of the California Water Code, which directs that:

"The department ... shall investigate conditions of the quality of all waters within the State, including saline waters, coastal and inland, as related to all sources of pollution of whatever nature and shall report thereon to the Legislature and to the appropriate regional water pollution control board annually, and may recommend any steps which might be taken to improve or protect the quality of such waters."

GROUND WATER QUALITY CONDITIONS
DURING 1961 AND 1962

This issue of Bulletin No. 66 presents 1,265 chemical analyses for 1961 and 1,381 for 1962 along with 278 radiological analyses. These analyses have been collected by department personnel or by cooperative individuals and agencies as a part of the ground water quality monitoring program. The following sections discuss the monitoring programs by monitored basin or county.

Hydrologic conditions during 1961 and 1962 changed from dry to wet. 1961 was the third successive dry year in Northern and Central California and was drier than the two preceding years. Greater use of ground water was necessary and serious declines of water levels occurred in many ground water basins.

Heavy rains in the spring of 1962 broke the drought. Water conditions in 1962 were generally good and the effect of previous dry seasons was arrested. However, a large percent of runoff went to the ocean and recovery of ground water levels was not as much as might be expected. Generally, there was a small rise in ground water levels.

Geology and hydrology are the two factors that have the greatest affect on the quality of ground water. Hydrologic changes are evidenced primarily by changes in water level or piezometric head. At present, there are only crude correlations between hydrologic and quality conditions in a ground water body. The general trend in ground water quality is a slight increase in concentration of most constituents when the water table is lowering. The quality tends to improve or remain about the same in areas with large quantities of surface water and where the water table is either rising or remaining about the same.

During 1961, water levels tended to lower throughout Northern and Central California. In 1962, water levels tended to rise reflecting improved recharge due to a wet spring. Correspondingly the dissolved mineral content of ground waters tended to increase during 1961 and to decrease slightly during 1962.

Generally, the quality of ground water in California is good and adequate for the uses made of it. There are varied problems in many localities throughout the State. The quality of ground waters in the State in 1961 and 1962 was about the same as in previous years except for the continuing slow intrusion of sea water into some coastal basins.

NORTH COASTAL REGION

(No. 1)

NORTH COASTAL REGION (NO. 1)

The North Coastal Region, shown on Plate 1, comprises all of the basins draining into the Pacific Ocean from the California-Oregon state line to the northern boundary of Lagunitas Creek drainage area in Marin County. It extends approximately 270 miles from north to south, ranges in width from 180 miles at the Oregon boundary to about 30 miles in the southern portion, and encompasses an area of about 19,000 square miles.

The development and use of ground water in the North Coastal Region varies considerably. Ground water development ranges from very slight in some areas, primarily to supply domestic needs, to extensive in other areas where as much as 90 percent of water requirements are met from ground water supplies.

Of the ground water basins which have been identified in the North Coastal Region, 13 have thus far been included in the ground water quality monitoring programs. These areas, as well as the number of monitored wells in each and the sampling times, are listed in the following tabulation.

<u>Monitored Area</u>	<u>Number of Wells Sampled</u>		<u>Sampling Time</u>
Smith River Plains (1-1)*	1961	14	September-November
	1962	13	July-September
Butte Valley (1-3)	1961	13	July-August
	1962	7	August-September
Shasta Valley (1-4)	1961	8	July-August
	1962	11	September
Scott River Valley (1-5)	1961	5	July
	1962	6	August
Hayfork Valley (1-6)	1961	5	July-August
	1962	4	June

* The number in parenthesis is the basin number and is explained in Appendix A under "Location Designation."

<u>Monitored Area</u>	<u>Number of Wells Sampled</u>		<u>Sampling Time</u>
Mad River Valley (1-8)	1961	11	July-August
	1962	11	August
Eureka Plain (1-9)	1961	6	August-September
	1962	4	August-September
Eel River Valley (1-10)	1961	13	July-September
	1962	9	August
Round Valley (1-11)	1961	10	August
	1962	9	September
Ukiah Valley (1-15)	1961	11	August-September
	1962	10	October
Sanel Valley (1-16)	1961	6	August-September
	1962	6	October
Alexander Valley (1-17)	1961	3	September
	1962	0	
Santa Rosa Valley (1-18)	1961	20	September
	1962	0	

Although ground water quality in the North Coastal Region remained generally good to excellent during 1961 and 1962, some significant changes were noted in individual wells in a few of the monitored areas.

A discussion of ground water quality conditions in the monitored basins is included in the following sections.

SMITH RIVER PLAIN (1-1)

Smith River Plain is located adjacent to the ocean in northwestern Del Norte County. The plain extends approximately 18 miles north to south, varies in width from about 4 to 7 miles, and contains an area of about 70 square miles. It is the largest alluvial area in the county.

Monitoring Program

The monitoring program in Smith River Plain was established in 1953 to maintain a check on ground water quality and to detect degradation which might result from sea water intrusion or from local domestic waste discharges. During August 1961, samples were collected from 16 wells in this area, and from 13 wells during July and September, 1962.

Ground Water Development

The principal source of ground water in the Crescent City area is the marine terrace deposits of the Battery formation. River terrace and flood plain deposits along the Smith River are locally important ground water sources. Aquifers of the area are believed to be interconnected and unconfined. Ground water is moderately to extensively developed. It supplies approximately one-half of the water requirements in the area. Most wells are shallow with well yields ranging from about 20 gallons per minute (gpm) in the marine formation to 340 gpm in the stream channel and flood plain deposits.

Evaluation of Ground Water Quality

Ground water is used for irrigation, municipal, domestic, and stock watering purposes. The major waste discharge in this area is the effluent from the Crescent City sewage treatment plant which is discharged

to the ocean and constitutes no threat to the quality of the ground waters. However, there exists the possibility of local contamination from individual septic tanks.

Ground waters of Smith River Plain are predominantly bicarbonate in type with magnesium generally the most abundant cation. At the present time, no serious water quality problems exist and there is no apparent sea water intrusion. Although most ground waters are of excellent mineral quality, high iron concentrations are found throughout the area. Total iron concentrations exceeded 0.5 parts per million (ppm) in five of the wells sampled in 1961. The highest iron concentration is 7.2 ppm in well 16N/1W-2Q1, located approximately 4 miles northeast of Crescent City.

Significant Water Quality Changes

Comparison of the 1961 analyses with those of 1960 showed a decrease in nitrate concentration from 49 to 20 ppm in well 16N/1W-20A2, approximately 1 mile north of Crescent City. 1961 analyses also indicate iron concentrations are less than those shown in 1960. The two most notable iron reductions occurred in wells 16N/1W-15C1, located approximately 3 miles northeast of Crescent City, and well 16N/1W-16D1, located approximately 2 miles north of Crescent City. Iron reduction in these two wells was from 4.8 to 0.01 ppm and 3.7 to 0.09, respectively.

BUTTE VALLEY (1-3)

Butte Valley lies in northeastern Siskiyou County about 30 miles south of the Oregon border and east of the Cascade Range. The valley floor is an irregularly shaped area comprising about 130 square miles.

Monitoring Programs

In 1957 a monitoring program was established in Butte Valley to provide information on ground water quality and to detect changes or trends. Samples were collected from five wells during 1961 and from seven in 1962.

Ground Water Development

Ground water is contained in various lava flows and to a lesser extent in alluvial, fluvio-glacial and lake deposits. With a few exceptions, aquifers of this area are believed to be interconnected and unconfined. Ground water in Butte Valley is moderately to extensively developed. The fine-grained, relatively impermeable deposits do not yield large amounts of water. Along the eastern border of the valley, wells yield from 900 to 3,000 gpm. The high yields are believed to come principally from lava deposits.

Evaluation of Ground Water Quality

Ground water is used for irrigation, domestic, and stock watering purposes. Ground waters of Butte Valley are generally a sodium-magnesium bicarbonate type, with low to moderate mineral concentrations. A few wells, however, produce highly mineralized water, probably originating in buried lakebed deposits in the east side of the valley.

Significant Ground Water Changes

No significant ground water quality changes were noted.

SHASTA VALLEY (1-4)

Shasta Valley lies in central Siskiyou County, between the Klamath Mountains on the west and the Cascade Range on the east. The valley is nearly oval-shaped, has a north-south length of about 30 miles, a maximum width of about 15 miles, and comprises an area of approximately 250 square miles.

Monitoring Program

The presence of highly mineralized ground waters, known to occur in certain geologic formations in the area, prompted the establishment of a monitoring program in Shasta Valley in 1957. The monitoring program includes all but a small area in the eastern portion of the valley. During 1961, samples were collected from six wells and from eleven wells during August and September 1962.

Ground Water Development

The most prolific aquifer in Shasta Valley is the Pluto's Cave basalt which is a highly permeable, black lava flow. Lenses of gravel and sand in the Recent alluvium and lavas of the Western Cascade series are locally important sources of ground water. In general, ground water is believed to be unconfined. There is moderate to extensive development. Well yields range from 120 to 4,000 gpm and average about 1,300 gpm.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic and stock watering purposes. There are no large waste discharges in Shasta Valley. Municipal sewage originating from the communities of Yreka and Weed may be a source of limited quality impairment. Chemical analyses of ground water samples

indicate that the water is generally moderate to very hard and of a magnesium or calcium bicarbonate type. The analyses of two wells, 44N/5W-32F1 and 44N/5W-34N1, used for irrigation purposes, show a boron concentration in excess of recommended limits for Class 1 irrigation water.

Significant Water Quality Changes

Comparison of analyses of samples collected in 1961 with those of 1960 showed a significant increase of most mineral constituents in well 44N/5W-32F1, located approximately 18 miles southeast of Yreka. The electrical conductance and boron in this well increased from 875 to 1,330 and from 0.72 to 2.1 ppm, respectively.

SCOTT RIVER VALLEY (1-5)

Scott River Valley is located in western Siskiyou County about 28 miles south of the California-Oregon boundary. The monitored portion has a north-south length of 22 miles, a maximum width of 10 miles, and comprises an area of approximately 80 square miles.

Monitoring Program

A monitoring program was established in Scott River Valley in 1957 to observe ground water quality and to detect significant changes. During 1961, samples were collected from eight wells in this area and from eight wells during August 1962.

Ground Water Development

The only water-bearing formation of importance is the younger alluvium comprised of stream channel, flood plain, and alluvial fan deposits. The most permeable deposits are located between Fort Jones and Etna. Indications of ground water confinement are found only in the west side alluvial fans. Ground water comprises only a small portion of the total amount of water used and is moderately developed. Yields of irrigation wells located in the stream channel and flood plain deposits range from 1,250 to 2,500 gpm.

Evaluation of Ground Water Quality

Ground waters are used principally for domestic purposes and to a lesser extent for irrigation. There are no large waste discharges in Scott Valley. Sewage from the towns of Etna, Fort Jones, and other communities are minor and do not threaten the quality of ground water.

Ground water in Scott River Valley is generally moderate to very hard and of magnesium or calcium bicarbonate type.

Significant Ground Water Quality Changes

No significant water quality changes have been observed at this time.

HAYFORK VALLEY (1-6)

Hayfork Valley is located in central Trinity County. It is an irregularly-shaped intermountain valley in the western portion of the Klamath Range. From east to west, the valley measures approximately 6 miles and has a north-south width of about 3.5 miles. The monitored area extends eastward an additional 2.5 miles to include the narrow valley of Carr Creek.

Monitoring Program

A monitoring program was established in Hayfork Valley in 1959 to observe ground water quality and to detect any significant changes that might occur. Five wells were sampled in June 1961 and four in June 1962.

Ground Water Development

Ground water occurs principally in recent alluvial deposits and in minor amounts in tertiary sedimentary rocks of the Weaverville formation. The recent alluvium occurs in the central portion of the valley along the flood plains of Hayfork Creek and its tributaries and ranges in thickness up to about 35 feet. The Weaverville formation occurs in the remainder of the area and underlies the alluvial deposits. Ground water is recharged primarily by infiltration of rainfall on the valley floor and by influent seepage from streams. Because of shallow depths and small pumping facilities, well yields in the Hayfork Valley are small. It is doubtful that any large capacity wells can be developed in this area because of the limited thickness of the alluvium and the relative tightness of the Weaverville formation.

Evaluation of Ground Water Quality

Until recently, ground water furnished the only water source for the town of Hayfork. The town now derives its municipal supply from a nearby surface water reservoir. Outlying homes, and some within the town, still utilize wells for their domestic supplies. At the present time there are no major discharges which constitute a threat to ground water quality in Hayfork Valley.

Ground waters of Hayfork Valley are generally of excellent mineral quality suitable for most beneficial uses. They are slightly to moderately hard, bicarbonate type waters with calcium or magnesium being the predominant cations.

Significant Water Quality Changes

No significant water quality changes have been observed at this time.

MAD RIVER VALLEY (1-8)

Mad River Valley is located in the coastal portion of Humboldt County immediately north of Humboldt Bay. It is bounded on the north and east by the Coast Range. The monitored area is approximately rectangular in shape, is about 10 miles in length, north to south, and extends inland an average of about 3 miles.

Monitoring Program

The monitoring program in Mad River Valley was established in 1957 to detect sea water intrusion and observe the general quality of ground waters in the basin. Samples were collected from 12 wells in this area during the period from July to October 1961 and from 11 wells during August 1962.

Ground Water Development

Alluvium constitutes the major source of ground water and includes stream terrace, flood plain and estuarine deposits; other water-bearing formations include the semiconsolidated Hookton formation and dune sand. Confined ground water occurs in the Hookton formation which consists of continental and marine deposits. Ground water is slightly to moderately developed with well yields up to 100 gpm.

Evaluation of Ground Water Quality

Ground water is used for domestic, irrigation, municipal, and industrial supplies. Effluent from the City of Arcata sewage treatment plant is the only major waste discharge in this basin. It is discharged

into Humboldt Bay. Waste discharges from the various small industries in the area do not constitute a threat to ground water quality at the present time.

Ground waters in Mad River Valley are generally bicarbonate in type with calcium or magnesium the predominant cations. They are moderately to very hard but suitable for most beneficial uses. There is evidence of sea water intrusion in the coastal segment of the valley where a few wells are known to yield waters with concentrations of chloride over 100 ppm. Waters high in total iron concentrations occur throughout the valley.

Significant Water Quality Changes

Comparison of analyses of samples collected in 1961 and 1962 with those of previous years showed no significant changes in ground water quality.

EUREKA PLAIN (1-9)

Eureka Plain is located in Humboldt County adjacent to Humboldt Bay. It varies up to approximately 6 miles in width, is about 12 miles long, and includes an area of about 70 square miles. Elk River is the principal stream in the basin.

Monitoring Program

The monitoring program in Eureka Plain was established in 1958 to detect evidence of sea water intrusion and observe general ground water quality. In October 1961, samples were collected from six wells and from four wells in August and September 1962.

Ground Water Development

The principal aquifer is the Hookton formation, of continental and marine origin, in which ground water is confined. Unconfined ground water occurs in alluvium and dune sand of limited area and thickness. Ground water is slightly developed in this basin. Wells in the Hookton formation yield from 10 to 30 gpm.

Evaluation of Ground Water Quality

Ground water is used for domestic, irrigation, and livestock watering purposes. There are three major waste discharges in this area, all consisting of effluent from sewage treatment plants serving the City of Eureka. Disposal is directly into Humboldt Bay and does not constitute a threat to ground water quality.

Chemical analyses of ground waters sampled in 1961 indicate moderately hard, bicarbonate type waters with magnesium being the predominant

cation. With the exception of water from well 5N/1E-18Q1 which contains a high concentration of boron, the monitored ground waters in Eureka Plain are of good quality, suitable for most beneficial uses. Waters in the dune sand near the shore are sodium chloride in character. The waters in dune sands are affected by wind borne spray but no other significant affect of sea water has been observed.

Significant Water Quality Changes

In well 5N/1E-18Q1, boron and iron decreased from 2.1 to 1.7 ppm and 2.6 to 0.40 ppm, respectively, between August 1960 and October 1961. In well 3N/1W-5K1--, iron decreased from 2.7 to 0.40 ppm between August 1960 and October 1961.

EEL RIVER VALLEY (1-10)

Eel River Valley is located in the west central portion of Humboldt County. The monitored portion is about 8 miles wide at the coast, extending inland about 18 miles. The valley contains an area of about 75 square miles.

Monitoring Program

The possibility of sea water intrusion prompted the establishment of a monitoring program in the area in 1956. During the period July to September 1961, samples were collected from nine wells and from nine wells in August 1962.

Ground Water Development

The major source of ground water is alluvium. Secondary sources include dune sand and older, semiconsolidated sediments. Unconfined aquifers occur in the alluvium, while ground water in the older sediments is confined. Ground water is moderately to extensively developed. Wells in the alluvium yield more than 600 gpm, while those in the older, semiconsolidated sediments have been known to yield as high as 1,200 gpm.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic and irrigation purposes and, to a lesser extent, for municipal purposes. There are no major waste discharges in the area. Minor waste discharges consist mainly of sewage effluent from the various small towns in the area. Treated sewage from Ferndale is discharged into the Salt River, and from Rio Dell into the Eel River. Septic tanks are employed by individual householders in the remaining communities. There is no apparent threat to quality of ground waters.

Ground waters of this area are generally a magnesium-sodium bicarbonate type water of good mineral quality suitable for most uses, except near the estuary of the Eel River, where sodium chloride water occurs in some of the monitored wells. The degraded water in these wells probably is due to the mixing of the saline water from the Eel River estuary and the adjacent ground water. Plate 2 locates the monitoring wells in Eel River Valley and plots chloride concentration to indicate the area affected by saline waters.

Significant Water Quality Changes

Comparison of analyses of samples collected in 1961 and 1962 with those of previous years show wide fluctuations in chloride concentrations in several wells located in the tidal portion of the Eel River. Since December 1956, chlorides in wells 3N/2W-13J1 and 27G1 have increased from 312 to 4,660 ppm and from 1,340 to 6,860 ppm, respectively. The fluctuations are due to sea water intrusion in the area.

ROUND VALLEY (1-11)

Round Valley is located in the northern portion of Mendocino County approximately 30 miles north of Willets. The valley is an oval-shaped basin approximately 6 miles long and 4 miles wide and contains an area of about 23 square miles. The elevation of the valley floor ranges from 1,300 feet at the south end to 1,440 feet at the north end. The town of Covelo is located at about the center of the valley.

Monitoring Program

In 1960, the ground water monitoring program was established to provide information on ground water quality. Samples were collected from 10 wells during August 1961 and from 9 wells in September 1962.

Ground Water Development

Ground water occurs in alluvial fan, flood plain, and lake deposits. These deposits are generally coarser and more permeable along the upper edge of the valley and grade into finer and less pervious material in the central and southern parts of the valley. Indications of both confined and unconfined ground waters are found in the valley. Ground water is recharged in the alluvial fan areas, primarily along the northern and western edges of the valley, and moves downslope to points of discharge in the central and southern parts of the valley. Ground water is the source of a large portion of the total amount of water used in Round Valley.

Evaluation of Ground Water Quality

Ground water supplies all the requirements for domestic use and a major portion of the irrigation and industrial needs. There are no large

waste discharges in Round Valley. Sewage from the town of Covelo is minor and is not a threat to the quality of ground water.

Ground water in the valley is of excellent mineral quality for irrigation purposes, but the presence of high iron concentrations throughout the valley renders untreated water objectionable for domestic use. These waters are generally calcium or magnesium bicarbonate in **character**.

Significant Water Quality Changes

No significant water quality changes were detected between August 1960 and 1962.

UKIAH VALLEY (1-15)

Ukiah Valley lies along the Russian River in southeastern Mendocino County. It is approximately 22 miles in length with a maximum width of 5 miles and 65 square miles in area.

Monitoring Program

The monitoring program was established in Ukiah Valley in 1953 to detect quality changes. The current program includes sampling of approximately 10 wells in the fall of each year.

Ground Water Development

The major source of ground water is alluvium, consisting of stream channel and terrace deposits. Semiconsolidated older sediments, exposed on the edges of the valley constitute a secondary source. Known aquifers in this area are unconfined. There is slight to moderate ground water development. Wells in the terrace deposits yield up to 15 gpm, and those in the alluvium yield from 50 to 200 gpm.

Evaluation of Ground Water Quality

The principal uses of ground water are domestic, industrial, and irrigation. A major waste discharge in this area is effluent from the City of Ukiah sewage treatment plant which is not considered a threat to quality of the ground water.

Ground waters in the central portion of Ukiah Valley are generally bicarbonate in type and are of good to excellent mineral quality. Calcium or magnesium are the predominant cations. Highly mineralized ground waters are found along the edges of the valley, probably from deep-seated juvenile

water rising along faults or flowing from the many springs in the area. Individual wells have produced waters with boron concentrations greater than 80 ppm, and chlorides in excess of 500 ppm.

Significant Water Quality Changes

Analyses of samples collected during the years 1961 and 1962 compared with those collected in 1960 showed no significant changes in concentration of mineral constituents.

SANEL VALLEY (1-16)

Sanel Valley lies along the Russian River in southeastern Mendocino County, about 14 miles south of Ukiah. It is an irregularly shaped area of about 11.5 square miles.

Monitoring Program

A monitoring program was established in Sanel Valley in 1956 because of the presence in the area of ground waters containing excessive concentrations of boron. Samples are collected from six wells during the fall of each year.

Ground Water Development

The principal aquifer is the unconsolidated alluvium deposited by the Russian River and its tributaries. Ground water is generally unconfined, with the exception of local pressure effects. Ground water is slightly to moderately developed. Wells located in terrace deposits yield from 5 to 50 gpm; those in coarse alluvium, from 750 to 1,250 gpm.

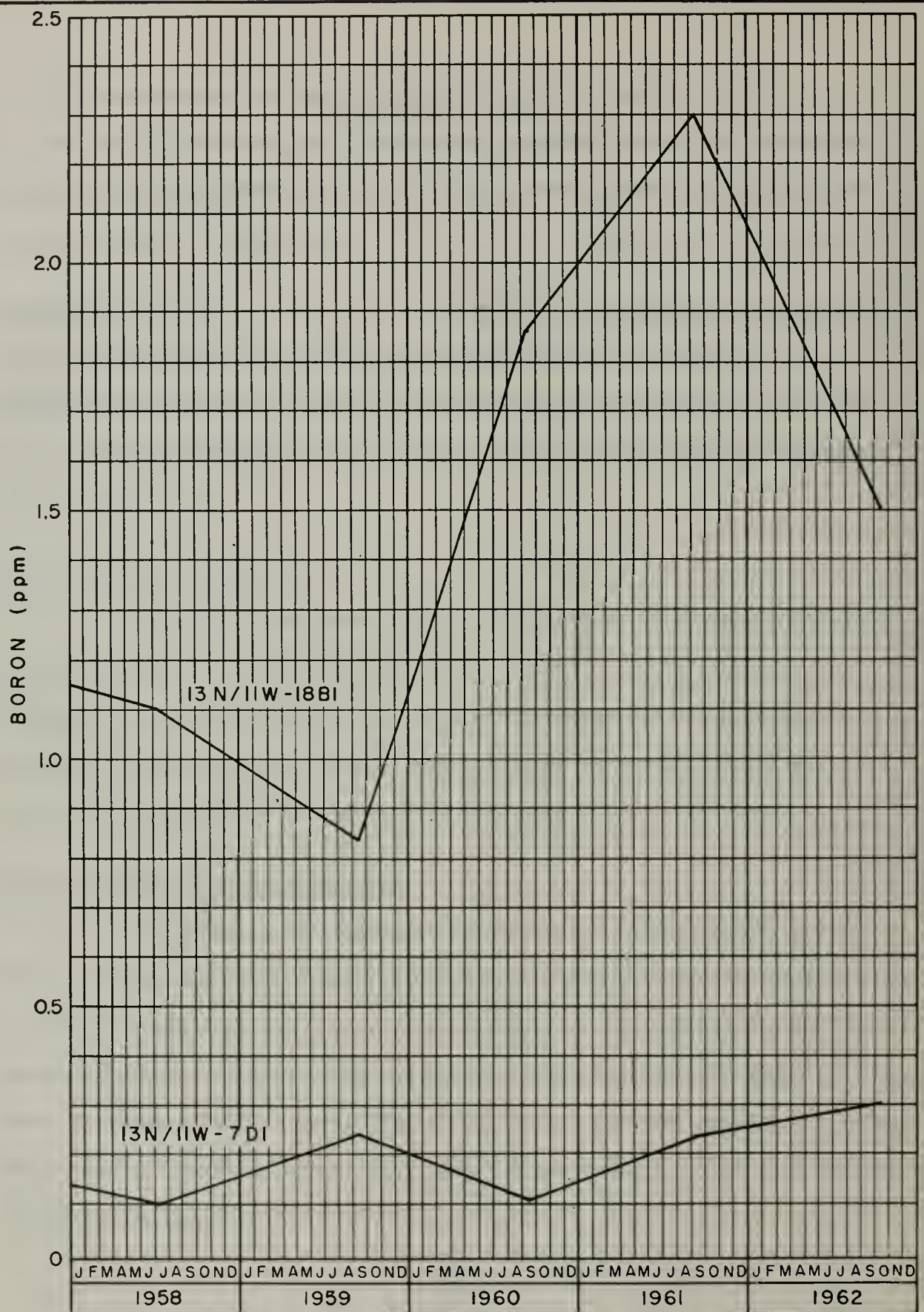
Evaluation of Ground Water Quality

Most domestic and municipal requirements are supplied by ground water. Irrigation requirements adjacent to the Russian River are met by direct diversion from the river. The remainder of the irrigated areas are served almost exclusively by ground water. There are no large industrial waste discharges in this area. Individual sewage disposal systems are commonly used for domestic wastes but are not considered as a threat to quality of the ground water.

Ground waters in Sanel Valley are generally magnesium-calcium bicarbonate in type and, although moderately hard, are suitable for most beneficial uses. Ground waters high in boron are known to occur in underlying geologic formations.

Significant Water Quality Changes

Comparison of 1961-62 analyses with those of 1960 showed no significant changes or trends. Fluctuations in boron concentrations vary with individual wells as indicated by the fluctuation graphs on page 34.



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
SANEL VALLEY

ALEXANDER VALLEY (1-17)

Alexander Valley lies along the Russian River in northern Sonoma County. The monitored portion is approximately 14 miles long, about 1.5 miles wide, and comprises an area of about 20 square miles.

Monitoring Program

A monitoring program was established in Alexander Valley in 1957. Samples were collected from six wells in September 1961. No samples were obtained in 1962.

Ground Water Development

The principal aquifers are the Recent alluvium and the Tertiary-Quaternary Glen Ellen formation. Older consolidated sediments and volcanic rocks produce only meager yields. There is moderate development for domestic purposes, but only limited development for irrigation. The alluvium yields from 200 to 500 gpm and the Glen Ellen formation yields up to 400 gpm.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic purposes. Disposal of winery waste water into unlined ponds is a potential source of degradation of ground water in the northern portion of Alexander Valley. Domestic sewage is generally disposed of by individual septic tanks.

Ground waters in Alexander Valley are generally of low mineral content and suitable for most beneficial uses; however, some of the ground waters are moderately to very hard. Ground waters containing concentrations of boron up to 2 ppm are known to occur in this valley. It is believed these boron waters come from connate or juvenile water rising along fault slip planes.

Significant Water Quality Changes

The quality of ground waters has not changed significantly since September 1960.

SANTA ROSA VALLEY (1-18)

Santa Rosa Valley lies in central Sonoma County. The monitored area includes Santa Rosa Valley, a portion of the Russian River flood plain bordering the Santa Rosa Valley on the northwest, and Bennett, Rincon, and Kenwood Valleys which lie to the east of Santa Rosa Valley. The area is about 25 miles long, 4 to 12 miles wide, and comprises approximately 150 square miles.

Monitoring Program

To maintain a record of existing ground water quality and to detect changes in quality due to high concentrations of boron and sodium which occur locally in the area, a monitoring program was established in Santa Rosa Valley in 1957. Twenty-three wells were sampled in this area during August and September 1961. No samples were obtained in 1962.

Ground Water Development

The principal aquifers are in alluvium, terrace deposits, the Sonoma volcanics, the Glen Ellen formation, and the Merced formation. Confinement occurs in all units; however, most of the water in the alluvial materials is unconfined. Ground water is extensively developed for most beneficial uses. It constitutes about 90 percent of the water used in the valley. Wells in the area yield up to 1,500 gpm.

Evaluation of Ground Water Quality

Ground water is used for domestic, municipal, industrial, irrigation, and stock watering purposes. The principal waste discharges in the area are effluent from sewage treatment plants serving the Cities of Santa

Rosa, the largest discharger, Sebastapol, and Healdsburg. There are also several industrial waste discharges in the vicinity of Santa Rosa. After treatment, these municipal and industrial wastes are discharged into Santa Rosa Creek or Mark West Creek and thence into the Russian River and are not considered to be a threat to the quality of ground waters.

Ground waters in Santa Rosa Valley are generally bicarbonate in type with sodium the predominant cation, although sodium seldom exceeds 50 percent of the base constituents. The waters, although moderately to very hard, are generally excellent in quality and suitable for most beneficial uses. However, concentrations of boron up to 3 ppm occur locally and the sodium percentage in a few wells is in excess of the recommended limit for irrigation use.

Significant Water Quality Changes

A comparison of analyses of samples collected during 1961 with those of 1960 showed only minor changes in mineral concentrations, except for Well No. 6N/7W-17E1 located approximately three miles northeast of Cotati. The boron concentration in this well increased from 0.4 ppm to 2.0 ppm between September 1959 and September 1961.

SAN FRANCISCO BAY REGION

(No. 2)

SAN FRANCISCO BAY REGION (NO. 2)

The San Francisco Bay Region includes all of the basins which drain into San Francisco Bay, San Pablo Bay, and that portion of Suisun Bay below Antioch. It includes portions of Alameda, Contra Costa, Marin, Napa, Santa Clara, San Mateo, Solano, and Sonoma Counties, and all of San Francisco County. This region extends about 125 miles from north to south, averages about 45 miles in an east-west direction, and comprises an area of about 4,400 square miles (Plate 1).

Ground water development in the San Francisco Bay Region has been an important factor in the economy of the area. In those portions of the region where surface supplies were not readily available, early development was accomplished by resorting to ground water pumping. As development of the region continued and demand for water exceeded the available supply, the major metropolitan areas undertook vast projects to import water supplies from great distances. Many of the agricultural, industrial, and domestic requirements in the outlying areas are still met by ground water pumping.

Within the boundaries of this region, 11 major ground water basins have been identified. Eight of these basins are included in the monitoring program. The areas, number of wells in each area, and sampling periods are listed in the following tabulation:

<u>Monitored Area</u>	<u>Number of Wells Sampled</u>		<u>Sampling Time</u>
Petaluma Valley (2-1)	1961	22	April & September
	1962	30	April & October
Napa-Sonoma Valley (2-2)	1961	31	April & September
	1962	25	April & September
Suisun-Fairfield Valley (2-3)	1961	13	May & September
	1962	12	May & September
Pittsburg Plain (2-4)	1961	3	June
	1962	3	June

<u>Monitored Area</u>	<u>Number of Wells Sampled</u>		
Clayton Valley (2-5)	1961	8	June
	1962	8	July
Ygnacio Valley (2-6)	1961	6	June
	1962	7	July
Santa Clara Valley (2-9)			
East Bay Area	1961	70	March & November
	1962	65	May & September
South Bay Area	1961	22	August
	1962	19	July & August
Livermore Valley (2-10)	1961	30	April & May
	1962	30	January & September

There were no general changes observed in ground water quality in most of the San Francisco Bay Region during the years 1961-62. Individual wells in the East Bay area of Santa Clara Valley (2-9.01) had progressive increases in chlorides, especially in wells pumping from the upper aquifer. These increases are attributed to continued sea water intrusion in the area.

PETALUMA VALLEY (2-1)

Petaluma Valley is located at the north end of San Pablo Bay in Sonoma and Marin Counties. The valley extends northwestward from the bay for about 16 miles and occupies an area of approximately 45 square miles. The segment fronting the bay is reclaimed tidal marshlands.

Monitoring Program

The monitoring program in Petaluma Valley was established in 1958 to maintain a record of sea water intrusion. The current sampling program includes 26 wells. Sixteen of these wells, in an area affected by sea water intrusion, are sampled semiannually; the remaining wells are sampled annually.

Ground Water Development

Petaluma Valley is a structural depression underlain with a thick series of water bearing materials. Ground water occurs principally in alluvial deposits and the Merced formation. Meager to moderate yields are also obtained from the Sonoma volcanics and the Petaluma formation. Most of the ground water development in Petaluma Valley is in the northern portion, where wells generally yield from 150 to 300 gpm. One well, however, has a reported yield of about 650 gpm. In the southern part of the valley yields are generally less than 30 gpm.

Evaluation of Ground Water Quality

A great portion of southern Petaluma Valley (included with Novato Valley in this report) is at or below sea level, and much of this land has been reclaimed. Only in the upper portion of the valley has the ground water been developed for agricultural and urban use.

The major waste discharge consists of domestic and industrial wastes from the City of Petaluma which are discharged to Petaluma Creek after secondary treatment. Domestic wastes from Hamilton Air Force are discharged directly to San Pablo Bay after primary treatment. Neither of these wastes is a present threat to ground water quality.

The water from the younger and older alluvium and the Merced formation is generally of good quality. Water from the shallower wells is of calcium bicarbonate type with deeper wells producing sodium bicarbonate type. Salt water has intruded the aquifers beneath the tidal marshlands and produced sodium chloride type water which is highly mineralized. Some wells in the southern and central portion of the area, adjacent to Petaluma Creek, produce water high in boron which makes them unsuitable for irrigation of some crops. A few wells in the valley show iron concentrations in excess of those recommended for domestic use. It appears that sea water intrusion in Petaluma Valley is not occurring directly from the bay by subsurface inflow, but through the downward and lateral movement of surface and near-surface brackish and saline waters. The chloride line on Plate 3 indicates the area affected by saline water.

Significant Water Quality Changes

Comparison of 1961 and 1962 analyses with those of 1960 showed only minor changes in mineral concentrations. The seasonal fluctuations in wells sampled in the spring and fall are, in general, not great. There were no significant changes in the extent of sea water intrusion.

NAPA-SONOMA VALLEY (2-2)

Napa and Sonoma Valleys are north-northwest trending, adjacent, alluviated valleys located at the southern end of the northern Coast Range Mountains in Napa and Sonoma Counties. They occupy structural depressions and drain southerly into San Pablo Bay. The two valleys merge about 5 miles from the northern margin of San Pablo Bay and become marshland. The tidal marshlands along San Pablo Bay are at or near sea level. Some of the land has been reclaimed and is as much as 5 feet below sea level. Napa Valley and Sonoma Valley comprise about 85 and 35 square miles, respectively.

Monitoring Program

A ground water monitoring program was established in Napa-Sonoma Valley in 1958 to maintain a record of existing ground water quality and to detect sea water intrusion. The current program includes 30 wells sampled in the spring and fall.

Ground Water Development

The principal body of ground water in Napa and Sonoma Valleys occurs in alluvial deposits. Appreciable quantities are also pumped locally from the Sonoma volcanics and from the Huichica and Glen Ellen formations. Ground water, generally unconfined to semiconfined, moves from the margins of the valleys to the center and then southward to the bay. Local confinement is indicated by the presence of a few flowing wells. The most productive of these artesian wells is reported to flow about 97 gpm.

Ground water in Napa-Sonoma Valley is moderately to extensively developed. The ground water supply is not abundant, and in some parts of

the valleys, it is inadequate. Although the alluvium yields water freely to wells, large yields are uncommon because of limited thicknesses of the aquifers. The yields are generally in the order of 20 to 50 gpm, although a few large irrigation wells produce up to 400 gpm.

Evaluation of Ground Water Quality

Most of the ground water used is for domestic and irrigation requirements. It is also used for industrial and stock watering purposes. The major waste discharge in Napa Valley is the effluent from Napa County Sanitation District No. 1. The sewage and industrial wastes are discharged into Napa River below the City of Napa after secondary treatment. Smaller discharges are made by Napa State Hospital, the Veterans Home, and the communities of Yountville, Oakville, Rutherford, St. Helena, and Calistoga. In Sonoma Valley, Sonoma Valley Sanitary District discharges domestic wastes to Schell Slough which is interconnected with San Pablo Bay by tidal waterways. The waste discharges are not considered to be a serious threat to the quality of ground water.

Ground water in most of Napa-Sonoma Valley is satisfactory for most uses. Sodium bicarbonate and sodium chloride are the most frequently occurring types of water in these basins. Better quality water is generally extracted from the alluvium than from the older formations. Ground water in the Sonoma volcanics is generally not as desirable in quality as that contained in the alluvium. Acid water, highly mineralized connate water, and water having undesirable taste, odor, or excessive boron and iron concentrations are encountered in many of the wells drilled into the Sonoma volcanics on the east side of Napa Valley. An intrusion of brackish waters from San Pablo Bay exists in the lower end of the valleys.

Significant Water Quality Changes

There were no significant changes in concentrations of mineral constituents in samples collected in 1961 and 1962. Areas where chloride concentrations in Napa and Sonoma Valleys exceeded 100 ppm during 1961 and 1962 are shown on Plate 4.

SUISUN-FAIRFIELD VALLEY (2-3)

The monitored area is located in the southwestern portion of Solano County and includes Suisun Valley, Green Valley, and the Birds Landing-Collinsville area. The small valleys widen and merge with the tidal marshes along Suisun Bay. The monitored area is approximately 16 miles long, about 12 miles in width and covers an area of about 125 square miles.

Monitoring Program

A monitoring program was established in Suisun-Fairfield Valley in the fall of 1958 to observe sea water intrusion and detect significant changes in ground water quality. The current program includes 15 wells sampled during the spring and fall.

Ground Water Development

The water bearing units consist of younger and older alluvial deposits and the Sonoma volcanics. The thickness of the younger alluvium averages about 20 feet at the northern end of the valley and gradually increases to more than 60 feet at the southern end, the greatest thickness being along Suisun Creek. The valley floor north and northeast of Fairfield is underlain at shallow depths by consolidated rocks which are considered essentially nonwater bearing. Most of the water pumped in Suisun-Fairfield Valley is probably obtained from the older alluvial materials. The thickness of this unit varies from feather edges along the margin of the basin to about 200 feet near Fairfield.

Ground water is extensively developed in the area west of Fairfield. Because of poor quality water, low permeability of sediments, and small yields, the area east of Fairfield is only moderately developed. There are mainly

domestic and stock wells in this area. Silt, clay, and sand make up the younger Recent alluvium which has a low permeability and generally yields small amounts of water. Well yields range from 20 to 565 gpm and average about 200 gpm for the entire area.

Evaluation of Ground Water Quality

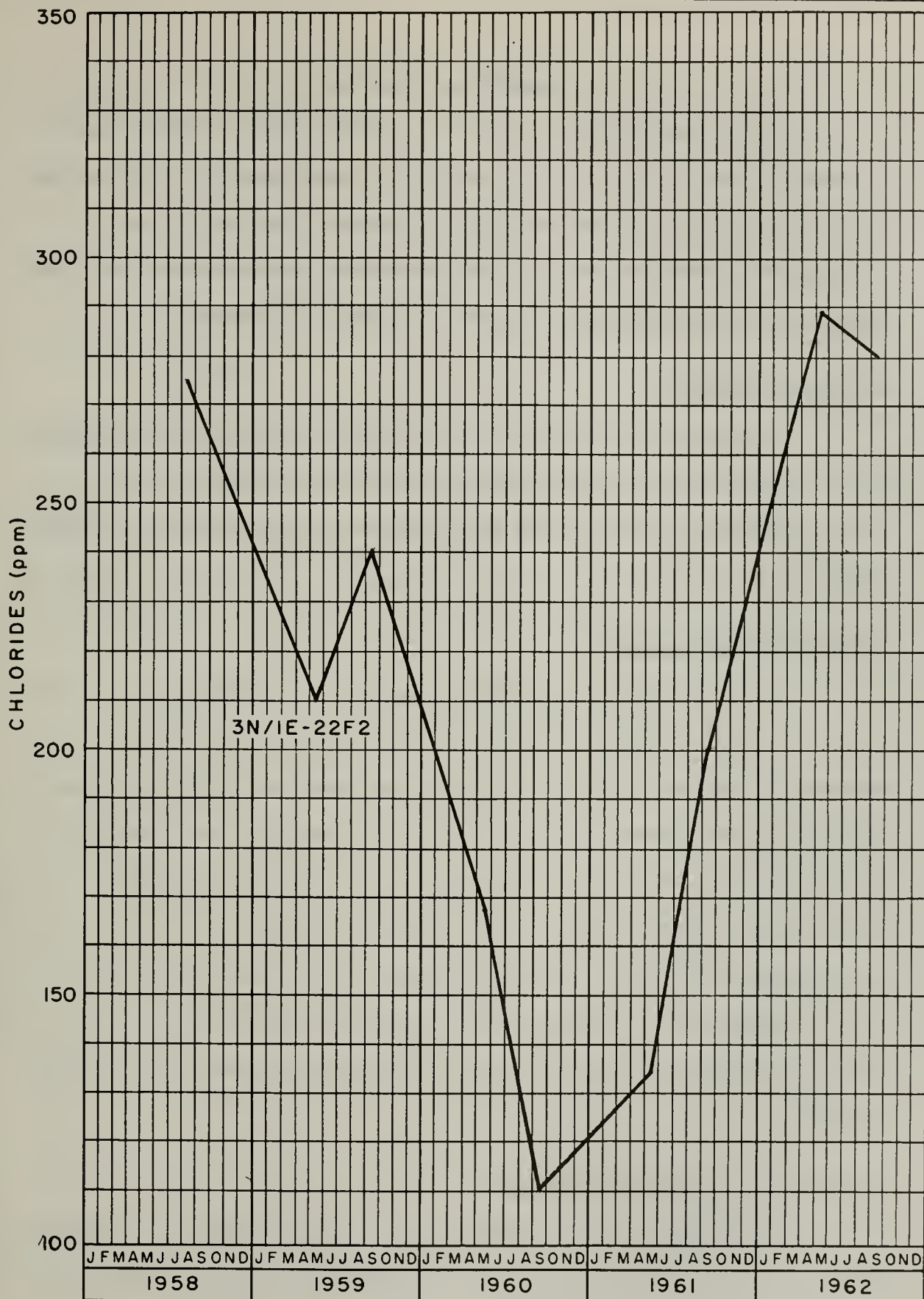
The beneficial uses of ground water are municipal, irrigation, industrial, domestic, and stock watering. The two major waste discharges located in this area are domestic wastes from Fairfield-Suisun Sewer District discharged to Suisun Slough after primary treatment, and domestic and industrial wastes from Travis Air Force Base discharged to Union Creek after primary treatment. These discharges are made in the lower end of the basin and to tidal waters. They are not considered a threat to the quality of ground water.

Under natural conditions, ground water moves southward from the margins of the valley towards the tidal marshes. However, in the vicinity of Fairfield a pumping depression has reversed the gradient of the ground water table. This poses a problem of potential encroachment of sea water from the bay. In addition to the sea water intrusion problem, high concentrations of boron and sodium are found in wells in the southeastern portion of the monitored area. Boron concentrations up to 9 ppm are also found in wells in the vicinity of Fairfield. Usable ground water is of calcium and sodium bicarbonate type and is generally hard and slightly alkaline.

Significant Water Quality Changes

The quality of ground water has not changed significantly in the past four years. However, the chloride concentration has increased in some

wells. The chloride concentration in well 3N/1E-22F2 near Birds Landing, increased from 111 ppm in September 1960 to 280 ppm in September 1962, as shown on the fluctuation graph on page 50. Wells in which chloride concentrations exceeded 100 ppm during 1961 and 1962 are shown on Plate 5.



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
SUISUN-FAIRFIELD VALLEY

PITTSBURGH PLAIN (2-4)

The Pittsburgh Plain occupies a narrow terrace fronting on the Sacramento River, New York Slough and the San Joaquin River, between Clayton Valley on the west and the Sacramento-San Joaquin Delta on the east in northeastern Contra Costa County. The monitored area is approximately 12 miles long, 2 miles wide, and covers an area of about 24 square miles.

Monitoring Program

A monitoring program was established in the Pittsburgh Plain in 1957 to provide information on ground water quality in the area and to detect significant changes. Three wells were sampled during June of 1961 and 1962.

Ground Water Development

The available ground water occurs in a thin section of alluvium and in the older Pittsburgh formation. Well yields range from 100 to 150 gpm and are derived, largely from unconfined ground water bodies. There is only limited development of ground water in Pittsburgh Plain, due in part to the poor quality water underlying the area and to the importation of surface water by Contra Costa Canal. In the 1930's many industries in the Pittsburgh area pumped ground water. The heavy pumpage created an overdraft and resulted in the encroachment of saline waters into ground water reservoirs near the bay. Pumping has since decreased and most of the water now used is from surface sources.

Evaluation of Ground Water Quality

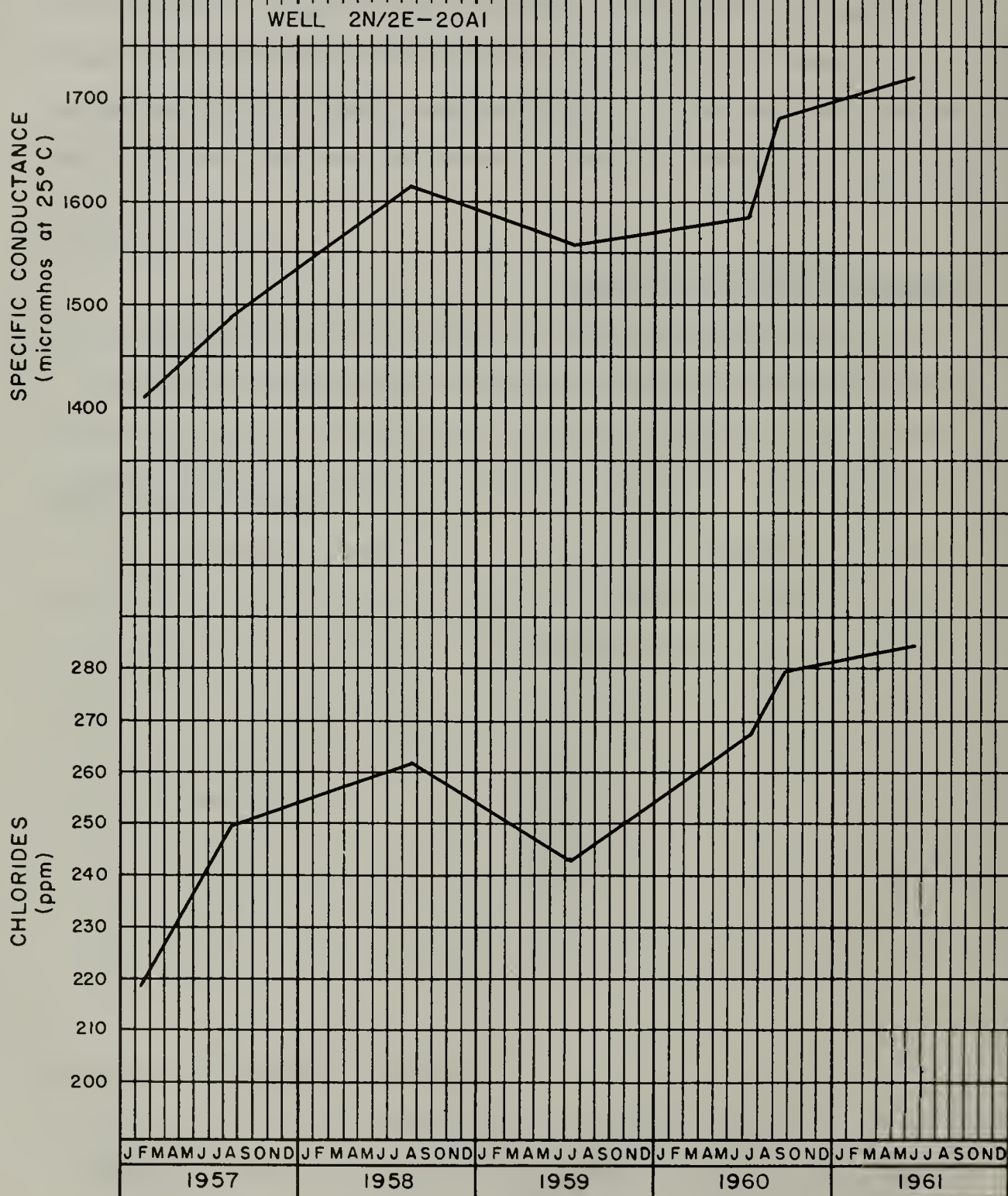
Ground water is presently used to a limited extent for industrial, irrigation, and domestic purposes. The municipalities and a large number of

industries are located along the waterfront and discharge their wastes into the tidal waters. Disposal of these wastes to tidal waters is not considered detrimental to the underlying ground water in this area at the present time.

Ground waters underlying Pittsburg Plain are generally poor quality sodium chloride and sodium sulfate type waters, high in mineral content and extremely hard. Unless softened, the waters are unsuitable for most domestic and industrial uses.

Significant Water Quality Changes

Well 2N/2E-20A1, two miles easterly from Antioch, continues to show a gradual increase in specific conductance, total dissolved solids, and chloride. Total dissolved solids have increased from 858 ppm in 1957 to 1,110 ppm in 1962. The trend is shown on the fluctuation graph on page 54.



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
PITTSBURG PLAIN

CLAYTON VALLEY (2-5)

Clayton Valley is located in north central Contra Costa County and extends from the foot of Mt. Diablo to Suisun Bay. It has a northwest-southeast trending axial length of about 10 miles, a maximum width of about 3 miles, and includes an area of approximately 20 square miles.

Monitoring Program

To observe the ground water quality and to detect significant changes, a monitoring program was established in Clayton Valley in 1957. The present program includes eight wells sampled annually in the summer.

Ground Water Development

The primary aquifer in this area is the Recent alluvium, composed of clay, sand, and gravel. A secondary aquifer consists mainly of the Pleistocene-Pittsburg formation also composed of continental clay, sand, and gravel. Terrace deposits along the south shore of Suisun Bay are considered a part of the secondary aquifer. There is only limited development of ground water in Clayton Valley. This area is served by the California Water Service Company with surface water from the Contra Costa Canal. Since surface water service was initiated, the pumpage of ground water has decreased. Well yields range from about 100 to 150 gpm.

Evaluation of Ground Water Quality

The present ground water pumping is limited to industrial use, a small amount of irrigation use, and a municipal supply pumped by California Water Service to augment its supply. An oil refinery located in the northern end of Clayton Valley which discharges its wastes into Suisun Bay

is the only significant source of wastes in the area. These wastes are not considered to be a threat to ground water quality.

With the exception of boron concentrations up to 2 ppm in some of the wells, the ground waters in Clayton Valley are generally of good to excellent mineral quality and are suitable for irrigation purposes. The waters are primarily bicarbonate type with sodium or magnesium the predominant cations. Excessive hardness make the water undesirable for domestic and some industrial uses, unless softened.

Significant Water Quality Changes

Analyses of sixteen samples collected in 1961 and 1962 showed only a few changes in mineral quality from analyses of samples collected previously. The chloride concentration in well 1N/1W-4R1, three miles southeast from Walnut Creek, increased from 115 ppm in September 1960 to 173 ppm in July 1962. There was a similar increase in total dissolved minerals.

YGNACIO VALLEY (2-6)

Ygnacio Valley is located in northern Contra Costa County and is contiguous with Clayton Valley. The two ground water basins are separated by the Concord fault which acts as a hydrologic barrier between the basins. The monitored area is about 10 miles long, varies in width from 1 to 6 miles and encompasses an area of approximately 20 square miles.

Monitoring Program

A monitoring program in Ygnacio Valley was established in 1957 to maintain a record of the ground water quality and to detect significant changes. The present program includes seven wells sampled annually in the fall.

Ground Water Development

Chief sources of ground water are the Recent alluvium and the Pittsburgh formation underlying Clayton Valley. Several pressure zones probably existed, but deepening of wells and increased pumping draft apparently resulted in pressure relief, causing the ground water reservoir to function as an unconfined aquifer.

There is only moderate development of ground water in Ygnacio Vally. This area is also served with surface water from the Contra Costa Canal and by California Water Service Company. The many industries located in the Pittsburgh area in the 1930's pumped ground water extensively, creating an overdraft which permitted saline water from the bay to intrude into the nearby ground water reservoirs. Pumping has since decreased and the majority of water now used is surface water. The larger wells yield up to 500 gpm, with the average withdrawal capacity being about 200 gpm.

Evaluation of Ground Water Quality

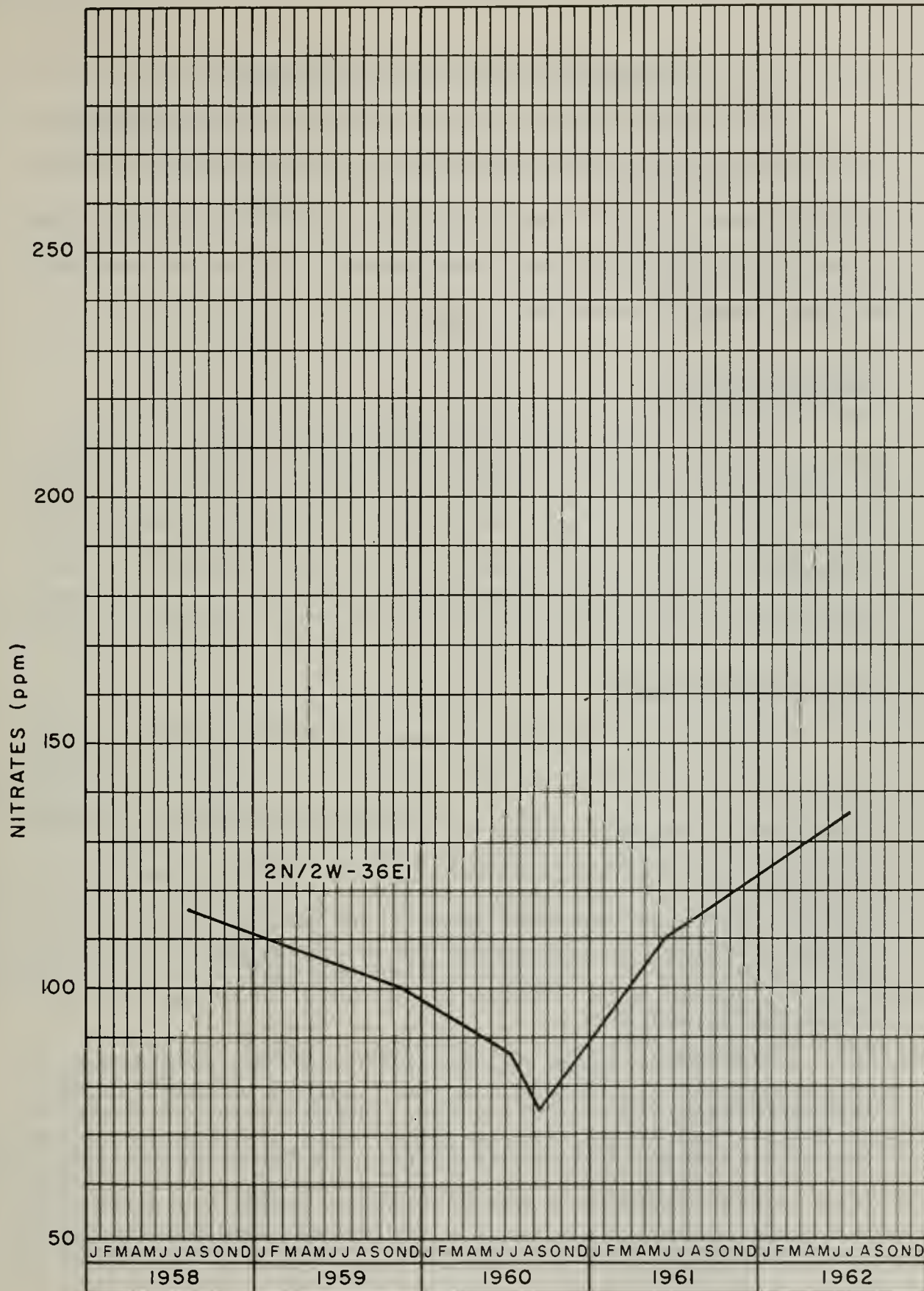
Present ground water pumping is limited to some industrial uses, small irrigation requirements and domestic supplies. Two major waste discharges are located in Ygnacio Valley. Central Contra Costa Sanitary District discharges domestic and seasonal cannery wastes to Grayson Creek. The City of Concord discharges to Walnut Creek. Because it is possible for water in these creeks to percolate to ground water, these wastes are considered a potential source of degradation.

In the vicinity of Pacheco, sodium chloride water is found which may be due to sea water intrusion. Boron in excess of 0.5 ppm is present throughout the valley. Some wells had concentrations of sulfates and nitrates which are far above the limits recommended in drinking water standards. Ground waters in this basin are also extremely hard.

Significant Water Quality Changes

Analyses of samples collected in Ygnacio Valley during 1961 and 1962 show few significant changes in concentrations of mineral constituents. No significant increases in chloride concentrations in Ygnacio Valley were observed.

The highest nitrate concentration found in Ygnacio Valley was 136 ppm in well 2N/2W-36E1, located in Concord. As shown on the fluctuation graph on page 59, nitrate concentration in this well decreased from a high of 121 ppm in 1957 to a low 76 ppm in 1960 and then increased to 136 ppm in 1962.



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
YGNACIO VALLEY

SANTA CLARA VALLEY, EAST BAY AREA (2-9)

The East Bay area of Santa Clara Valley is located in Alameda County between the base of the western slope of the Diablo Range and San Francisco Bay. It extends from the vicinity of the City of Albany on the north to the Alameda-Santa Clara County line on the south, and comprises an area of about 140 square miles.

Monitoring Program

A ground water monitoring program was established in the East Bay area in 1953 primarily to maintain surveillance on quality of ground water in areas subject to sea water intrusion. The current sampling program includes 70 wells. About one-half are sampled semiannually and the remaining are sampled annually. Two additional wells are sampled quarterly.

Ground Water Development

Water bearing formations include unconsolidated alluvial deposits of Quaternary age and older, and semiconsolidated sediments of Tertiary-Quaternary age. These units consist of layers and lenses of sand and gravel separated by thick layers of silt and clay. This interlayering of the thick, extensive, relatively impermeable clays and the permeable alluvial sands and gravels has resulted in the formation of confined aquifers beneath the greater part of the East Bay area.

The confined ground water portion of the Niles cone contains at least three fairly well-defined aquifers. They are thick, relatively continuous, and separated by blue clay layers. The "Newark aquifer" capped by a clay layer approximately 40 feet in thickness, extends to a maximum depth of approximately 175 feet; the "Centerville aquifer" occurs between 190 and

240 feet below the surface; and the "Fremont aquifer" between approximately 250 and 300 feet. All of these aquifers and their confining clay layers extend westward beneath San Francisco Bay. The "Newark aquifer" is essentially open to infiltration of salt water from the bay. Aquifers that are probably equivalent to, but discontinuous with, those in the Niles cone occur beneath the surface of the San Leandro and San Lorenzo cones. However, these aquifers are much thinner and less extensive.

The greater portion of the water requirement in the southern part of the area is met by pumping from the alluvial deposits of the Niles cone. Draft on ground water resources within this cone has increased to such an extent that ground water levels remain perennially below sea level throughout a large portion of the area. Yields of wells drawing from the various aquifers are highly variable. Limited data indicate that yields from the "Newark aquifer" range from 100 to more than 1,000 gpm, while yields from the deeper aquifers range from 250 to 1,800 gpm.

Evaluation of Ground Water Quality

In the northern portion of the East Bay area, ground water is used in small amounts by private individuals and industries. In the central and southern portion ground water is used extensively for irrigated agriculture and, to a lesser extent, for urban and industrial requirements.

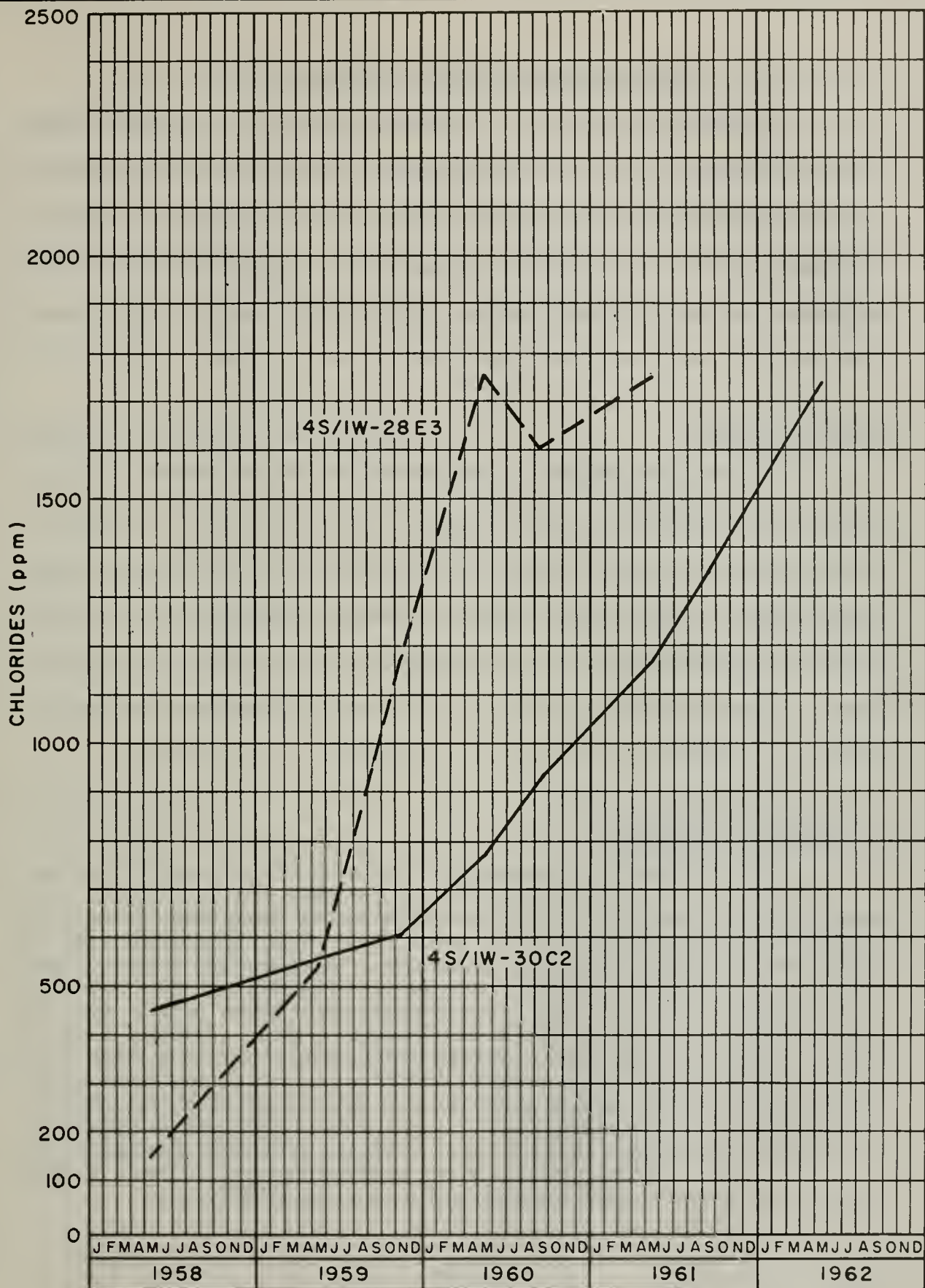
The major waste discharges are sewage or industrial effluent from the Cities of Hayward and San Leandro, Oro Loma Sanitary District, Union Sanitary District, Holly Sugar Company, and West Vaco Chemical Division. Disposal is to tidal waters of San Francisco Bay and is not considered a threat to the quality of ground water.

Native ground waters of this area are calcium-magnesium bicarbonate in type, of good mineral quality and suitable for most uses. Waters from the forebay area contain low to moderate amounts of dissolved solids, chlorides, and boron. Boron concentrations up to 5 ppm, are present in water from wells in the vicinity of Newark and the Mission fault. The fault is located east of Niles and probably allows deep, poor quality water to move upward and degrade ground water. Sea water intrusion in this area was first detected by the presence of high chloride concentrations in the "Newark aquifer" of the Niles cone near the bay. The "Centerville aquifer" in the vicinity of Centerville also shows high chloride concentrations.

Significant Water Quality Changes

Significant quality changes in the East Bay area of Santa Clara Valley occurred only in the area of sea water intrusion in the confined ground waters of the Niles cone. Sea water intrusion in the "Newark aquifer" is shown by the 350 ppm chloride line on Plate 6. The degree of degradation ranges up to 1,750 ppm chloride in well 4S/1W-28E3 located near Centerville, as illustrated by the fluctuation graph on page 63.

Increasing chloride concentrations in some wells pumping from the "Fremont aquifer" during 1961 and 1962 indicate the continuation of localized degradation in this aquifer. Chloride concentration in well 4S/1W-30C2, also located near Centerville, increased from 776 ppm in 1960 to 1,740 ppm in 1962 as illustrated by the fluctuation graph. The source of such localized degradation is believed to be leakage of poor quality water from the "Newark aquifer" through improperly constructed or abandoned wells, or through localized discontinuities or variations in permeability of the confining clay layer. Over 40 wells have been sealed since 1957 in an attempt to arrest this degradation.



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
SANTA CLARA VALLEY EAST BAY

SANTA CLARA VALLEY, SOUTH BAY AREA (2-9)

The monitored portion of the South Bay area of Santa Clara Valley consists of that portion of north Santa Clara Valley lying within Santa Clara County and extending from San Francisco Bay southerly to San Jose. The area is bounded on the east by the Diablo Range and on the west by the Santa Cruz Mountains. The monitored area extends about 15 miles east to west, about 16 miles north to south, and comprises about 150 square miles.

Monitoring Program

A monitoring program was established in 1953 to observe sea water intrusion and significant quality changes in the South Bay area of Santa Clara Valley. The program includes a fall sampling of 20 wells which pump mainly from the lower confined aquifers. Adequate sampling to maintain surveillance of sea water intrusion in the upper aquifer was not accomplished. Special studies currently underway will provide additional data in the near future.

Ground Water Development

The main source of ground water in Santa Clara Valley is the Quaternary alluvial deposits. The Tertiary-Quaternary Santa Clara formation is a water bearing unit of secondary importance. Water-bearing sediments occupy the floor of the valley proper and some adjacent upland areas. The principal aquifers in the monitored area exhibit pressure characteristics and are separated from the free ground water zone by relatively impervious strata which prevent hydraulic continuity with overlying water-bearing deposits. Ground water occurs in both confined and unconfined conditions.

Ground water supplies about 95 percent of the water requirements of this area and is extensively developed. Artificial recharge is practiced by the Santa Clara Valley Water Conservation District. Stored surface water is released to permeable stream channels and to percolation ponds on the valley floor to infiltrate and replenish the ground water body. Well yields range from a few gallons per minute to over 1,700 gpm. Most wells produce over 500 gpm.

Evaluation of Ground Water Quality

Ground water is used principally for irrigation, public supply, and industry. There are five major waste discharges in this area consisting of municipal sewage from the Cities of San Jose, Sunnyvale, Mountain View, Palo Alto, and the Milpitas Sanitary District. The wastes are discharged to water courses adjacent to San Francisco Bay and pose no immediate threat to ground water quality.

Ground waters in this area are generally a bicarbonate type with sodium and calcium the predominant cations. Although moderately to very hard, the waters are of good to excellent quality and suitable for most uses. In parts of the eastern portion of this area, ground water is of questionable quality for irrigation due to high concentrations of boron, particularly in the Penitencia Creek cone area. Sea water intrusion into the upper aquifer along the bay had been detected as early as 1920 and extended approximately two miles inland in 1939. Prolonged overdraft of the lower confined aquifers poses a threat of additional sea water intrusion. Plate 7 shows the area affected by sea water intrusion.

Significant Water Quality Changes

Analyses of samples collected in Santa Clara Valley-South Bay area during 1961 and 1962, show few significant changes in concentration of mineral constituents. Localized high chloride concentrations in the lower aquifer near Guadalupe River and Palo Alto are shown by several wells. The chloride concentration in well 6S/1W-16A1, near Guadalupe River, fluctuated from 156 ppm in 1960 to 647 ppm in 1961 and 631 ppm in 1962. Wells 5S/3W-35G1 and 6S/3W-1B1, both in the Palo Alto area, continued to show chloride concentrations of over 150 ppm.

LIVERMORE VALLEY (2-10)

Livermore Valley is located in the eastern portion of Alameda County with a minor portion extending into Contra Costa County. The valley has an east-west length of about 14 miles, varies from 3 to 6 miles in width, and includes an area of about 50 square miles.

Monitoring Program

Due to the dependence of the area on ground water supplies and the presence in the ground water of excessive quantities of boron and nitrates, a monitoring program was established in Livermore Valley in 1953. The current monitoring program samples 30 wells each summer.

Ground Water Development

Sources of ground water include alluvial deposits of Recent age, as well as the Livermore gravels which is an older, semiconsolidated deposit. Quaternary alluvial deposits comprise the chief aquifers and contain unconfined ground water, except in the western and northwestern part of the valley where lake bed clays confine permeable beds. The Livermore gravels exhibit both confined and unconfined ground water characteristics.

Ground water is moderately to extensively developed and supplies almost all of the water requirements. Well yields are low near the perimeter of the valley, increase toward the center, and range from less than 10 to about 2,000 gpm.

Evaluation of Ground Water Quality

Ground water is used primarily for irrigation and domestic purposes. The largest waste discharge in this area consists of effluent from the City of Livermore sewage treatment plant. This effluent is discharged to percolation and evaporation ponds, although some overflow reaches Arroyo

Los Positos during periods of heavy rainfall. Smaller waste discharges come from the City of Pleasanton, and from military and industrial installations. These discharges percolate to ground water and are a potential source of quality degradation.

Although ground waters of Livermore Valley are generally of good mineral quality and are suitable for irrigation purposes, they are extremely hard for domestic use. Water high in boron is found in the northern and eastern portion of the valley and water high in nitrates occurs in localized areas. Water with chloride concentrations up to 13,000 ppm may be found in a confined area 1.5 miles southeast of Dublin. These conditions appear to be related to waters derived from underlying and adjacent marine formations, the presence of faults allowing the upward migration of poor quality water, and the limited amounts of recharge afforded by a small catchment area with meager rainfall. The high nitrate content may also result from infiltrating waters which have been deteriorated by waste discharges or fertilizers. The extent and concentration of boron in ground water is shown on Plate 8.

Significant Water Quality Changes

Analyses of samples collected in Livermore Valley during the years 1961 and 1962 show no significant changes in concentrations of mineral constituents when compared with prior information.

CENTRAL COASTAL REGION

(No. 3)

CENTRAL COASTAL REGION (NO. 3)

The Central Coastal Region includes all of the coastal drainage areas from the southern boundary of Pescadero Creek Basin in San Mateo County to the northeastern boundary of Rincon Creek Basin in Ventura County. It extends inland an average of about 50 miles to the crest of the coastal mountain ranges, and encompasses an area of approximately 11,000 square miles. The region is characterized by narrow coastal strips and coastal valleys sloping toward the ocean and backed by mountain ranges paralleling the coast.

Valley areas in this region depend largely on ground water as a source of supply and approximately 90 percent of water requirements are met by ground water pumping. Nineteen ground water basins have been identified in the region with eighteen utilized intensively to supply irrigation water. Six ground water basins have been included in the statewide ground water monitoring program. The areas, the number of monitor wells in each, and the sampling times are listed in the following tabulation:

<u>Monitored Area</u>	<u>Number of Wells Sampled</u>		<u>Sampling Time</u>
Pajaro Valley (3-2)	1961	30	May-September
	1962	42	May-September
Gilroy-Hollister Basin (3-3)	1961	25	June
	1962	25	June
Salinas Valley (3-4)	1961	65	July-August
	1962	20	July-August
Carmel Valley (3-7)	1961	5	July
	1962	9	July-August
Santa Maria River Valley (3-12)*			(Southern District)
Cuyama Valley (3-13)*			(Southern District)

* Ground water basins are located in Southern California and will be discussed in Part II of this bulletin.

Ground water quality in the four valleys and basins covered by this report did not change significantly during 1961-1962.

PAJARO VALLEY (3-2)

Pajaro Valley comprises an irregularly shaped area of about 75 square miles in the Pajaro River drainage area below Pajaro Gap. It extends from Elkhorn Slough on the south to the Santa Cruz Mountains on the north and east. The area occupies the northern extremity of Monterey County, a small part of the northwestern corner of San Benito County, and the southern portion of Santa Cruz County.

Monitoring Program

Sea water intrusion into ground water adjacent to Monterey Bay prompted the inclusion of Pajaro Valley in the monitoring program in 1953. The current program includes 30 wells sampled each summer.

Ground Water Development

Ground water occurs principally in Quaternary alluvial deposits with lesser quantities being available in Pleistocene terrace deposits and the Aromas Sands. The Pliocene Purisima formation produces ground water only in very localized areas. In the valley floor area of the basin ground water occurs in three distinct zones, designated the shallow, intermediate, and deep zones. The shallow zone which is of minor importance is unconfined and extends from land surface to a depth of about 50 feet. The intermediate zone, which is largely confined, lies below the shallow zone, extending to a depth of about 200 to 300 feet. The deep zone underlies this intermediate zone and extends to a maximum depth of about 800 feet below land surface. At least two of these zones are in hydraulic continuity with the forebay in the vicinity of the City of Watsonville. The forebay area is underlain by permeable deposits and is the principal source of ground water replenishment to the intermediate zone.

There is extensive development of ground water in the valley. Nearly all water for irrigation, and a portion of the municipal supply for the City of Watsonville is pumped from the confined ground water bodies. The yield of wells in Pajaro Valley ranges from small capacity domestic wells to large irrigation wells yielding more than 500 gpm.

Evaluation of Ground Water Quality

Ground water is the source of more than 95 percent of irrigation supplies in Pajaro Valley. A few industries concerned with the processing and packing of agricultural products also depend on ground water as do domestic users in outlying areas. Most urban domestic supplies are obtained from surface waters but supplemental supplies are obtained from ground water.

The principal waste discharge in Pajaro Valley is the sewage and industrial waste effluent from the City of Watsonville. This discharge includes sewage from Freedom Sewer Maintenance District and Pajaro Sanitation District. The wastes are discharged to Monterey Bay by a submarine outfall after primary treatment and chlorination.

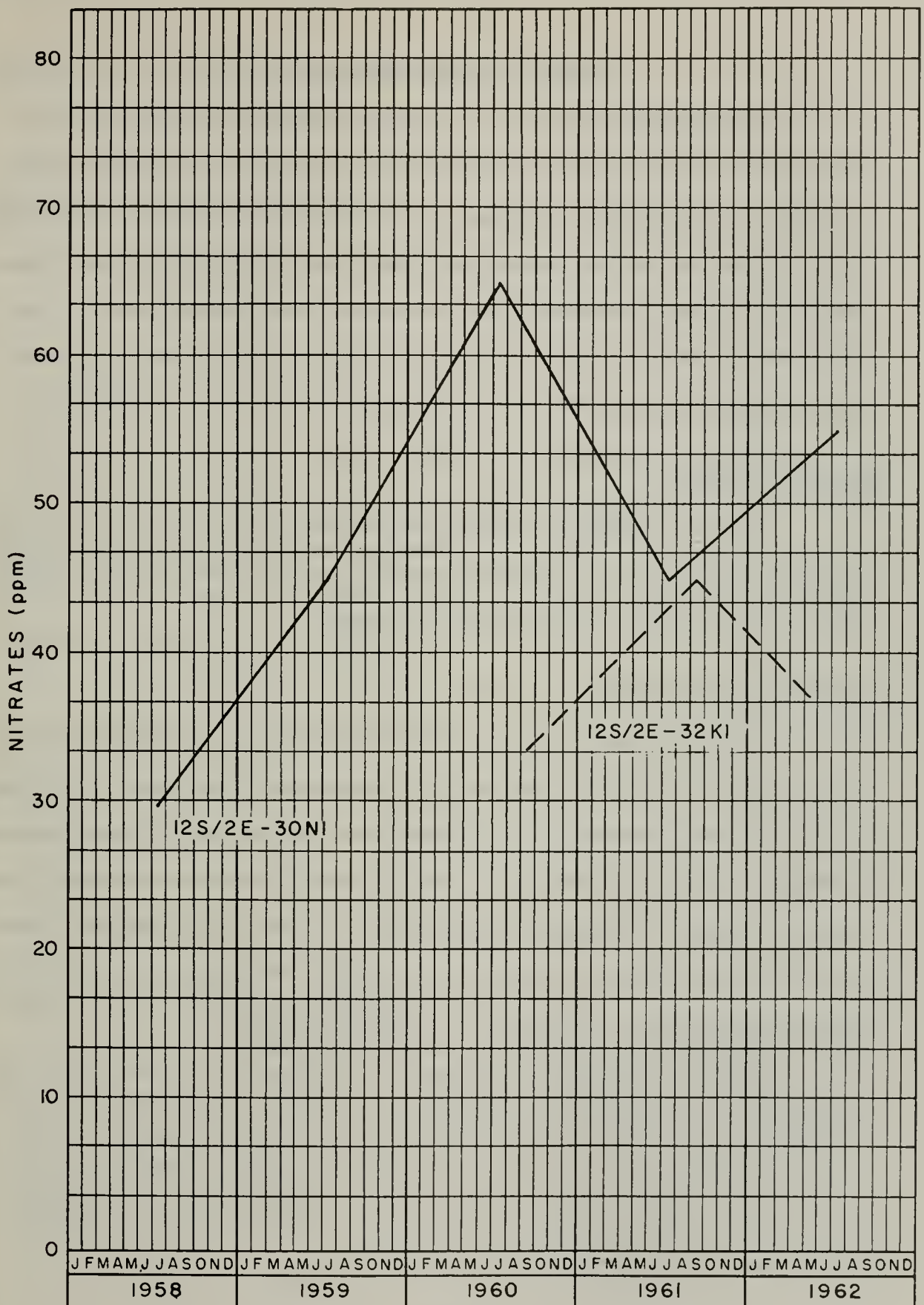
Ground water in the shallow zone is often of poor mineral quality and is used infrequently. In the intermediate zone, ground water is generally of good to excellent mineral quality and suitable for most purposes. Intermediate zone ground water is predominantly a calcium-magnesium bicarbonate type with low to moderate total dissolved solids, chlorides, and boron. The water is moderately to very hard, which limits its use for domestic and industrial purposes. Only limited data are available on ground water quality of the deep zone. These data indicate the water to be of excellent mineral quality.

Sea water intrusion has occurred along the bay where the aquifers are open to the ocean. Wells pumping from the intermediate zone near Monterey Bay produce some high chloride waters due to sea water intrusion. In a few wells located near the bay, nitrate concentrations exceed recommended limits for domestic use.

Significant Water Quality Changes

Analyses of samples collected in Pajaro Valley in 1961 and 1962 show few significant changes in mineral concentration. The advance of sea water intrusion is indicated by the 100 ppm isochlor lines on Plate 9. The chloride concentration in well 12S/2E-19M1 increased from 23 ppm in 1960 to 101 ppm in 1962 and in well 12S/2E-30E1 increased from 1,540 ppm in 1960 to 5,452 ppm in 1962.

No significant changes or trends in nitrate concentrations occurred during 1961 and 1962. High concentrations and fluctuations are illustrated by the graphs on page 75 for wells 12S/2E-30N1 and 12S/2E-32K1 located near the bay.



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
PAJARO VALLEY

GILROY-HOLLISTER BASIN (3-3)

Seven small valleys make up the Gilroy-Hollister Basin, which includes South Santa Clara Valley, Hollister Valley, San Benito Valley, and four other small, contiguous valleys. The monitored area extends a distance of about 25 miles from the topographic divide near Morgan Hill, Santa Clara County, southeasterly to Tres Pinos at the head of Hollister Valley in San Benito County. The area varies from 3 to 10 miles in width and comprises about 150 square miles. Drainage from the area is to the Pajaro Valley.

Monitoring Program

An annual monitoring program was established in this basin in 1958 to maintain a record of ground water quality conditions and trends. Twenty-five wells in the basin are sampled each summer.

Ground Water Development

Water-bearing units are the alluvial sediments of Quaternary age, the San Benito gravels of Pliocene-Pleistocene age and portions of the Purisima formation of Pliocene age. Alluvial sediments include stream channel, stream terrace, and flood plain deposits. The alluvium in the Hollister area attains a maximum thickness of approximately 250 feet. Confined ground water conditions exist in large areas adjacent to the Pajaro River with free or partially confined ground water occurring in the remaining areas.

There is extensive development of ground water for irrigation and domestic needs, and moderate development for industrial and stock watering uses. The yield of wells is about 350 gpm in South Santa Clara Valley and averages about 500 gpm in the Hollister area. Some wells in the Hollister area are reported to yield up to 1,700 gpm.

Evaluation of Ground Water Quality

This area is largely agricultural and major water use is for irrigation and domestic purposes. Smaller amounts are used for stock watering, and for the processing of agricultural products. Pumping for irrigation constitutes about 75 percent of the total ground water withdrawal.

Waste discharges in the area include domestic sewage and wastes from food processing plants. The largest discharge is domestic and industrial sewage from the City of Gilroy which is discharged to Llagas Creek after primary treatment. Smaller amounts are discharged by the Cities of Hollister and San Juan Bautista, and by food processing plants in the vicinity. The majority of liquid wastes can percolate and reach the underlying ground waters. No evidence is available as yet to indicate that these wastes are degrading the ground water supply.

Ground water in the Gilroy vicinity, while moderately to very hard, is generally of good mineral quality and suitable for most beneficial uses. The water is typically calcium-magnesium or magnesium-calcium bicarbonate type. Ground water in the vicinity of Hollister are of poor quality, high in total dissolved solids content, and contain boron. These waters also contain high concentrations of chlorides, sulfates, and nitrates.

Significant Water Quality Changes

Analyses of samples collected during 1961 and 1962 showed no significant changes in concentration of mineral constituents from 1960 samples. Well 12S/6E-19E2, located about 5.5 miles northeast of Hollister in the Fairview district, contained the highest boron concentration (19 ppm in 1961) found in Gilroy-Hollister Basin. The source of the boron is probably poor quality water migrating upward along the Hayward fault.

SALINAS VALLEY (3-4)

Salinas Valley is a narrow, elongated, northwest-southeast trending valley located mostly in Monterey County. The monitored portion of the valley varies from 2 to 10 miles in width, is approximately 40 miles in length, and comprises about 300 square miles of highly productive irrigated and dry farmed land. The valley is bordered on the northeast by the Gabilan Range and on the southwest by the Santa Lucia Range and the Sierra de Salinas.

Monitoring Program

A monitoring program was established in this valley in 1953 to observe and report the status of sea water intrusion and maintain a record of ground water quality conditions and trends. Seventy wells are included in the current program and are sampled each summer.

Ground Water Development

Ground waters in Salinas Valley occur principally in three aquifers. These consist of an upper, unconfined aquifer and two lower, confined aquifers. Water from the upper zone is not used in significant amounts due to its poor mineral quality. In lower Salinas Valley, the principal aquifers are confined. They have been designated as the 180-foot and 400-foot aquifers due to the average depth of the water-bearing materials below ground surface. The confined aquifers are recharged by subsurface inflow from a forebay area south of Gonzales. Supplemental recharge to the forebay area is accomplished by controlled releases of stored surface waters from Nacimiento Dam.

Lower Salinas Valley is devoted to the production of irrigated crops. Ground water is extensively developed for irrigation and for rural domestic

uses. Yield of wells ranges from low capacity domestic wells to irrigation wells yielding from 200 gpm to more than 3,000 gpm.

Evaluation of Ground Water Quality

Ground water is principally used for irrigation. Other uses are municipal, industrial, and stock watering. There are three major waste discharges in lower Salinas Valley. They are treated sewage and industrial wastes from the City of Salinas and Alisal Sanitary District. These wastes are discharged to Salinas River near Spreckels. A third discharge consists of untreated industrial wastes from Spreckels Sugar Company, which are discharged to percolation ponds on lands adjacent to the Salinas River. Waste discharges are not considered a serious threat to the quality of ground water.

Ground waters of Salinas Valley are quite variable in mineral quality. In the coastal segment, between the bay and a line approximately 2 miles inland, the water in the upper perched zone is not used in significant amounts due to its poor quality. Ground water in the 180-foot aquifer in the coastal segment is degraded by sea water and is a sodium chloride or sodium bicarbonate type. In this same area ground water in the 400-foot aquifer is sodium bicarbonate in type, and is degraded by sea water to a limited extent.

About one mile west of Salinas, poor quality ground water occurs in the 180-foot aquifer. This poor quality water is sodium chloride in type. The water in the 400-foot aquifer in this area is generally of good mineral quality.

Analyses of ground water from the area near Greenfield showed a mixed calcium-magnesium-sodium sulfate type.

Significant Water Quality Changes

Significant changes in mineral concentrations in Salinas Valley during 1961 and 1962 were limited primarily to slight inland movements of sea water intrusion along the coastal segment as shown by the 100 ppm isochlor lines on Plate 10. Well 13S/2E-16E1 pumps from the 180-foot aquifer and showed increases in chloride concentrations from 174 ppm in 1960 to 223 ppm in 1962; well 13S/2E-20C1 pumps from the 400-foot aquifer and showed increases of chloride concentrations from 181 ppm in 1960 to 264 ppm in 1962.

The localized area of poor quality water occurring in the 180-foot aquifer about 1 mile west of Salinas continued to show slight increases in chloride concentration. Well 14S/3E-30F1, located in this area, showed an increase of chloride concentration from 232 ppm in 1960 to 257 ppm in 1962.

CARMEL VALLEY (3-7)

Carmel Valley, located in northern Monterey County, is a long, alluvium-filled valley extending easterly from the coast a distance of 23 miles. The valley floor ranges from about one mile wide to about one-fourth mile wide. It is drained by the Carmel River which flows to the ocean.

Monitoring Program

A monitoring program was established in this area in 1953 to detect evidence of sea water intrusion and to maintain a record of ground water quality conditions and trends. The current program includes nine wells which are sampled annually in the summer.

Ground Water Development

Ground water occurs in the unconsolidated Recent alluvium underlying the valley and in isolated stream terrace deposits. Water-bearing deposits are comprised mainly of sand and gravel with small amounts of silt and clay. The Recent alluvium is about 125 feet thick near the coast and feathers out along the valley margin. The seaward extension of the aquifer is open to the ocean. Ground water in the valley is probably unconfined.

The lower portion of the valley is utilized for truck crops and pastures. The central and upper portions of the valley are rapidly becoming urbanized and agricultural use of ground water will decrease accordingly. Local domestic and irrigation requirements are supplied by numerous wells in the valley. Well yields range from small amounts for domestic use up to 600 gpm for irrigation needs.

Evaluation of Ground Water Quality

Ground water is used for irrigation and local domestic needs. The major waste is sewage effluent from Carmel Sanitary District which is discharged into Carmel Bay after primary treatment.

Ground waters in the monitored portion of Carmel Valley are generally of calcium-sodium bicarbonate type, usually require softening for domestic use, and contain moderate total dissolved solids.

Significant Water Quality Changes

In general, the analyses of samples collected from nine wells in Carmel Valley during 1962 showed only minor variations in mineral quality from previous samples. Analyses of samples collected from the current network of stations indicate no identifiable sea water intrusion

CENTRAL VALLEY REGION

(No. 5)

CENTRAL VALLEY REGION (NO. 5)

The Central Valley Region extends from the California-Oregon state line southward to the Tehachapi Mountains, and from the Coast Range on the west to the Sierra Nevada on the east as shown on Plate 1. It averages about 120 miles in width and is more than 500 miles long. The region comprises a drainage area of approximately 59,000 square miles, and includes nearly 44 percent of the valley and mesa lands of the State.

Ground water has been an important source of water supply in the development of the Central Valley Region. Ground water is used principally for irrigation purposes but also supplies many communities and is used for domestic and industrial purposes. Some of the most extensive irrigated areas in the region derive their water supplies entirely from ground water sources.

Twenty-nine ground water basins have been identified in the Central Valley Region, 15 of which have thus far been included in the monitoring program. These areas, as well as the number of monitored wells in each and the sampling times, are listed in the following tabulation. Discussions and data are presented for each of the basins presently included in the monitoring program. The Sacramento and San Joaquin Valleys have been further subdivided into counties for discussion and data presentation purposes.

<u>Monitoring Area</u>	<u>Number of Wells Sampled</u>		<u>Sampling Time</u>
Goose Lake Valley (5-1)	1961	11	August
	1962	10	August
Alturas Basin (5-2)	1961	13	August
	1962	9	August
Big Valley (5-4)	1961	14	September
	1962	15	August

<u>Monitoring Area</u>	<u>Number of Wells Sampled</u>		<u>Sampling Time</u>
Fall River Valley (5-5)	1961	11	September
	1962	10	August
Redding Basin (5-6)	1961	21	August-November
	1962	26	June
Lake Almanor Valley (5-7)	1961	0	August
	1962	7	
Indian Valley (5-9)	1961	0	August
	1962	9	
American Valley (5-10)	1961	0	August
	1962	10	
Mohawk Valley (5-11)	1961	0	August
	1962	4	
Sierra Valley (5-12)	1961	19	September
	1962	18	August
Upper Lake Valley (5-13)	1961	13	June
	1962	12	June
Kelseyville Valley (5-15)	1961	12	June
	1962	11	June
Sacramento Valley (5-21)			
Tehama County	1961	25	January-June
	1962	23	June-July
Glenn County	1961	23	August
	1962	24	July
Colusa County	1961	10	June-July
	1962	19	July-August
Butte County	1961	9	September
	1962	9	July-September
Sutter County	1961	31	June
	1962	31	June-September
Yuba County	1961	14	September
	1962	16	August
Placer County	1961	18	August
	1962	18	August
Yolo County	1961	46	July-August
	1962	46	July

<u>Monitoring Area</u>	<u>Number of Wells Sampled</u>		<u>Sampling Time</u>
Sacramento County	1961	32	July-October
	1962	17	August
Solano County	1961	10	May-June
	1962	9	May
San Joaquin Valley (5-22)			
San Joaquin County	1961	32	July-August
	1962	30	July
Stanislaus County	1961	48	July-September
	1962	49	July-September
Merced County	1961	48	June-September
	1962	51	June-September
Madera County	1961	29	July
	1962	31	June-September
Fresno County	1961	0	
	1962	70	April, June-October
Tulare County	1961	33	April-August
	1962	35	June-September
Kings County	1961	22	August
	1962	26	August
Kern County	1961	56	June-August
	1962	71	June-September
Panoche Valley (5-23)	1961	4	July
	1962	6	July

There were no extensive changes in quality of ground waters in the Central Valley Region during 1961 and 1962. There were, however, significant changes in specific constituents in individual wells and in groups of wells in certain areas.

In the Sacramento Valley, boron increased substantially in one well in Tehama County, while most of the monitoring wells in Glenn County showed slight decreases in boron. There were also notable decreases in boron concentration in wells in Colusa and Yolo Counties.

Ground water quality in the San Joaquin Valley remained essentially the same as that of the previous year.

GOOSE LAKE VALLEY (5-1)

Goose Lake Valley is located in northeastern California and southeastern Oregon. That portion of the valley considered in this report is 27 miles long, approximately 8 miles wide, and is located entirely in Modoc County, California. The portion of the valley pertinent to this report encompasses an area of approximately 200 square miles, with 120 square miles periodically inundated by Goose Lake.

Monitoring Program

To maintain a check on existing ground water quality and to detect possible changes in quality, a monitoring program was established in Goose Lake Valley in 1959. During August 1961 samples were collected from 11 wells in this area and from 10 wells during August 1962.

Ground Water Development

Water-bearing formations in the California portion of Goose Lake Valley are comprised of alluvial and lake deposits, and fractured volcanic formations. Unconfined water is found throughout the valley with some confined water occurring in the northern end. Ground water is moderately developed.

Evaluation of Ground Water Quality

Ground water is used as the primary domestic source throughout the entire valley. Except for several ranches near the community of Davis Creek that use ground water as a primary irrigation source, ground water is used only as a supplemental irrigation source. There are no major waste discharges in the area. Minor waste discharges consist of industrial

effluent from a sporadically operated lumber mill located at Willow Creek. Sewage disposal is largely by individual septic tanks. Waste discharges are not considered to be a threat to the quality of ground water.

Ground waters of this area are soft to very hard bicarbonate type waters with calcium or sodium being the predominant cation, and are suitable for most beneficial uses. Waters from well 47N/14E-2H1, located 3.5 miles south of the community of New Pine Creek, and well 48N/14E-35A2, located 2.3 miles south of New Pine Creek, have concentrations of fluoride and boron in excess of recommended limits for either domestic or irrigation use. Both aforementioned wells also contain very high percent sodium concentrations.

Significant Water Quality Changes

Comparison of chemical analyses of samples collected in 1961 and 1962 with those collected in 1960 indicate no basin-wide changes in ground water quality. Analysis of well 47N/14E-2H1 showed an increase in boron of 0.30 ppm to 3.4 ppm and a decrease in fluoride from 4.6 ppm to 3.5 ppm.

ALTURAS BASIN (5-2)

Alturas Basin is located in the south-central portion of Modoc County, has a north-south length of 25 miles, is approximately 21 miles wide, encompasses an area of about 135 square miles, and lies at an elevation of about 4,400 feet above sea level.

Monitoring Program

An annual ground water monitoring program was established in the Alturas Basin in 1959. In August 1961, 13 samples were collected from wells in this area and from 9 wells during August 1962.

Ground Water Development

Aquifers in Alturas Basin are mainly alluvial deposits consisting of gravel, sand, silt, and clay laid down as stream deposits or lake sediments. These alluvial deposits are underlain by fractured volcanics. There has been a moderate development of ground water in Alturas Basin.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic and municipal purposes and, to a lesser extent, for irrigation. The only waste discharge consists of effluent from a secondary sewage treatment plant located about one mile southwest of Alturas. Effluent from this plant is discharged into the Pit River. Waste discharges in other smaller communities and outlying residences in the basin are by individual septic tanks. Waste discharges are not considered a threat to the quality of ground water.

Chemical analyses of ground water samples, collected in 1961 and 1962, indicate soft to very hard sodium bicarbonate type water suitable for

domestic purposes. Eight of the 13 monitored wells yielded water with sodium percentages of 60 or greater which places them in class 2 or 3 for irrigation purposes. Only one of these wells is presently being used for irrigation purposes. Most of the high percent sodium wells are located in the western portion of Alturas Basin.

Significant Water Quality Changes

The only significant water quality change occurred in well 41N/10E-2N2. Electrical conductance and sulfate increased from 714 to 833 micromhos and from 172 to 239 ppm, respectively, between July 1960 and August 1961.

BIG VALLEY (5-4)

Big Valley is located in northeastern California and encompasses an area of approximately 180 square miles in northwestern Lassen and southwestern Modoc Counties. The valley has a north-south length of approximately 13 miles and is about 15 miles wide.

Monitoring Program

An annual ground water monitoring program was established in 1960. Samples were collected from 14 wells during September 1961 and from 15 wells in March and August 1962.

Ground Water Development

The water-bearing formations in Big Valley are comprised of old lake sediments, stream deposits, and fractured volcanic formations. Unconfined water is found in these deposits throughout the valley with some confined water occurring locally. Ground water in Big Valley is only slightly developed. The retarded development of ground water in this area is related to the sparse population and relatively complete use of surface water for irrigation.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic purposes. At the present time there is no appreciable utilization of ground water for irrigation purposes. There is no major waste discharge in the area. Disposal of municipal wastes is handled by individual septic tanks and cesspools and presents no major water quality problem at this time.

Ground water in Big Valley is generally of excellent quality, suitable for most beneficial uses. Bicarbonate is generally the predominant

anion and calcium or sodium seem to be the predominant cations. Wells that yield a calcium-magnesium type water are found at several locations in the valley.

Significant Water Quality Changes

Comparison of analyses of samples collected in 1961 with those of the previous year showed fluctuations in nitrate concentrations in three wells and boron and fluoride fluctuations in one well. Wells 39N/7E-14R1 and 39N/8E-26J1 decrease in nitrate concentrations from 62 to 43 ppm and from 112 to 73 ppm, respectively. Well 38N/8E-30R1 increased in nitrate concentrations from 75 to 137 ppm. Well 38N/8E-14P1 showed a decrease in fluoride and an increase in boron of 2.8 to 1.9 ppm and from 3.3 to 5.4 ppm, respectively. The aforementioned wells are all used for domestic purposes and, with the exception of well 39N/7E-14R1, fail to meet recommended or mandatory drinking water standards set by the U. S. Public Health Service.

FALL RIVER VALLEY (5-5)

Fall River Valley is one of the smaller valley fill areas in the northeastern counties. Located in northeastern Shasta and northwestern Lassen counties, Fall River Valley has an east-west length of 13 miles, encompasses an area of approximately 100 square miles, and lies at an elevation of about 3,300 feet above sea level.

Monitoring Program

The monitoring program in Fall River Valley was established in 1959 to detect any possible degradation of ground water quality. During August 1961, samples were collected from 11 wells in this area and from 10 wells during August 1962.

Ground Water Development

Ground water reservoirs in Fall River Valley are comprised of lake and alluvial deposits, underlain by and interbedded with fractured water-bearing volcanics. The sedimentary lake and alluvial deposits range in thickness from several feet to depths in excess of 700 feet. Unconfined water is found throughout the valley with some confined water occurring locally in the underlying volcanics. Ground water has, so far, undergone only limited development. Yields of wells drilled into lake sediments are low, generally less than 300 gallons per minute (gpm). However, wells drilled through the lake sediments into the underlying volcanic rocks produce from 200 to 1,000 gpm.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic purposes and in some instances as a supplemental irrigation source. There are no waste discharges

that constitute a threat to the present quality of ground waters in the valley.

Ground waters in Fall River Valley are generally bicarbonate in type with either sodium or calcium being the predominant cation. Quality of these waters are generally excellent throughout the valley with only scattered wells yielding poor quality water. Water from one domestic well shows a nitrate concentration in excess of the 45 ppm recommended limit set by the U. S. Public Health Service for domestic water.

Significant Water Quality Changes

A comparison of analyses of 1960 with those of 1961 indicate that there are no significant basin-wide water quality changes. One well, 37N/4E-1K1, used for domestic purposes showed an increase in nitrate concentration from 52 ppm in July 1960 to 83 ppm in August 1961.

REDDING BASIN (5-6)

Redding Basin is located in the south central portion of Shasta County. The monitored area includes primarily the Cow Creek, Stillwater, Anderson, and Cottonwood Valleys. The area is approximately 21 miles north to south and has a maximum east-west dimension of about 22 miles. It comprises an area of about 280 square miles.

Monitoring Program

An annual monitoring program was established in Redding Basin in 1957 to maintain a check on ground water quality and to detect significant changes. During the period from August to November 1961, samples were collected from 22 wells and from 26 wells during June 1962.

Ground Water Development

Ground water occurs chiefly in formations of alluvial or volcanic origin, ranging from Pliocene to Recent in age. The water-bearing formations, in order of decreasing age, are the Tuscan and Tehama formations, the Red Bluff Gravels, and the Quaternary alluvium. Unconfined ground water occurs in the Quaternary alluvium. Confined to partially confined conditions occur in the Tuscan and Tehama formations. Ground water is moderately developed. Wells west of Cottonwood yield 500 to 800 gpm; those in the southeastern portion of the basin yield 1,000 to 2,000 gpm.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic, municipal, and industrial requirements. Irrigation water is supplied mainly from surface sources. The only large waste discharge in Redding Basin consists of sewage effluent

from the City of Redding, discharged into the Sacramento River and not a threat to the quality of ground water.

Ground waters of Redding Basin are generally magnesium-calcium or magnesium-sodium bicarbonate in type and are, in most cases, of excellent mineral quality suitable for most beneficial uses. Total dissolved solids seldom exceed 300 ppm and the percent sodium is generally below 60. However, previous analyses indicate several wells in the area have iron concentrations in excess of U. S. Public Health Service recommended limits for domestic purposes.

Significant Water Quality Changes

Analyses of samples collected from monitored wells in 1961 showed only a few changes in mineral concentrations from those of the previous year.

A known source of degraded ground waters occurring in the northern and northwestern portion of the Redding Basin derive their origin from saline waters of the Chico formation. Well 30N/4W-1E1, located approximately 3 miles northeast of Anderson, had a decrease in electrical conductance and total dissolved solids of 152 to 58 micromhos and 118 ppm to 80 ppm, respectively. Well 32N/3W-35C1, located approximately 3 miles north of Millville, had a decrease in electrical conductance, chloride, and total dissolved solids of 440 to 203 micromhos, 74 ppm to 3.1 ppm, and 290 ppm to 177 ppm, respectively.

LAKE ALMANOR VALLEY (5-7)

Lake Almanor Valley is located in northwest Plumas County. Most of the basin is occupied by Lake Almanor although discontinuous segments of alluvium along the shore are estimated to cover 7 square miles.

Monitoring Program

The monitoring program was initiated in 1962 to determine the quality of ground water in the area and to detect significant changes. During August 1962, seven ground water samples were collected. Plate 11 shows the area monitored and the location of monitored wells.

Ground Water Development

The largest alluviated area in the basin is located at the northwest end of the lake and is the site of the Town of Chester. The water bearing series in this area includes volcanic rocks and ash which are interbedded with varying proportions of gravel, sand, silt, and clay. Specific yield of the formation is estimated to average about 5 percent. Ground water storage capacity in the upper 200 feet of alluvium is estimated to be about 45,000 acre-feet. Ground water in this area has not been intensively developed although domestic needs appear to be satisfied exclusively by small individually owned wells.

Evaluation of Ground Water Quality

Ground water is used for domestic purposes. Chester Sanitation District is the major discharger in the area. Treated effluent from the plant is discharged to percolation ponds adjacent to Lake Almanor and has no apparent affect on ground water quality. Analyses of samples indicate the waters are calcium bicarbonate, are low in dissolved solids, and are of excellent mineral quality.

Significant Water Quality Changes

No significant changes have been observed at this time.

INDIAN VALLEY (5-9)

Indian Valley is located in north central Plumas County. The maximum width of the valley is little more than 2 miles, yet the valley extends about 9 miles from Taylorsville northwest to Greenville and approximately 8 miles from the outlet near Crescent Mills northeast to the upper end of North Arm. The area of the valley floor is estimated to be 20 square miles.

Monitoring Program

A monitoring program was initiated in 1962 to determine the quality of ground water being used. During August 1962, nine ground water samples were collected. The monitored area and location of samples wells is shown on Plate 12.

Ground Water Development

Water bearing sediments in the valley include unconsolidated, interbedded, and intermixed deposits of gravels, sands, silts, and clays. The gravels and sands were deposited by streams while silts and clays, which are abundant, were deposited during the periods when an ancient lake occupied the valley. Thermal springs located in the northwest portion of the valley appear to be the result of faulting which occurred in conjunction with the deposition of the alluviated material.

Well logs indicate relatively low permeability and consequently low specific yield for the bulk of the sediments. Higher specific yields are encountered in the area of North Arm and along Indian Creek above Taylorsville. Ground water storage capacity is estimated to be over 100,000 acre-feet in the top 200 feet of alluvium. Ground water comprises only a small portion of the total amount of water used in the valley since most of the domestic water is supplied by individual wells and springs.

Evaluation of Ground Water Quality

The primary use of ground water in Indian Valley is for domestic purposes. The Greenville Sanitation District plant appears to be the only major discharger of domestic waste water although a number of lumber mills discharge industrial wastes to settling ponds. Most of the dwellings in the valley, exclusive of the area covered by the sanitation district, are equipped with septic tank disposal systems. Waste discharges have no apparent affect on the quality of ground water.

Results of chemical analyses indicate the majority of waters are calcium bicarbonate in type; however, in some wells sodium replaced calcium as the dominant cation, and in one instance chloride replaced bicarbonate as the dominant anion. Total dissolved solids were low (152 ppm average) and with the exception of some moderately hard waters were of excellent mineral quality.

Significant Water Quality Changes

No significant changes have been observed at this time.

AMERICAN VALLEY (5-10)

American Valley is an irregularly shaped valley located in central Plumas County. The valley's maximum length is approximately 8 miles and the maximum width 3 miles. The alluviated area is estimated to cover 7 square miles.

Monitoring Program

The monitoring program was initiated in 1962 to determine the quality of the ground water. In August, 10 ground water samples were collected. The monitored area and location of monitoring wells is shown on Plate 13.

Ground Water Development

Water bearing materials in this basin consist of unconsolidated gravels, sand, and silts deposited by streams on the valley floor. Interbedded in the gravels, sand, and silts are clays deposited in an ancient lake that periodically filled the valley from the time of its structural origin.

The permeability of the sediments displays wide variation with maximum specific yields occurring adjacent to Spanish Creek. Ground water storage capacity of the valley is estimated to be 50,000 acre-feet within the top 200 feet of alluvium.

Evaluation of Ground Water Quality

The primary use of ground water is for domestic purposes. Quincy Sanitary District is the major discharger of domestic waste water while saw mills contribute most of the industrial wastes. Treated domestic waste water is discharged to Spanish Creek during periods of high flows but is confined to percolation ponds and used for irrigating pasture when flows in the creek are too low for adequate dilution. Saw mill wastes are usually ponded for percolation. Waste discharges have no apparent affect on quality of ground water.

Chemical analyses of samples indicate the principal cations are calcium and magnesium while bicarbonate is the dominant anion. Concentrations of dissolved solids are low and with the exception of some samples displaying hardness, the water appears to be suitable for most beneficial uses.

Significant Water Quality Changes

No significant changes in ground water quality are apparent at this time.

MOHAWK VALLEY (5-11)

Mohawk Valley is an irregularly shaped alluviated area located in south central Plumas County. The Middle Fork of the Feather River flows through this valley which is approximately 10 miles in length and varies in width from 1/2 to 2 1/2 miles. The valley encompasses an area of 20 square miles.

Monitoring Program

Collection of ground water samples was initiated in 1962 to determine the quality of ground water used and to detect water quality changes. Four samples were collected in August. Plate 14 shows the area and the location of wells monitored.

Ground Water Development

Mohawk Valley was created by faulting; however, the long narrow graben originally created has been modified by the addition of lake deposits and glacial outwash. This alluvium consists of unconsolidated to consolidated silt, sand, and gravel, and the availability of water depends upon the degree of consolidation and size of particles. Ground water development has been confined to small domestic wells.

Evaluation of Ground Water Quality

Ground water is used exclusively for domestic purposes. There are no major waste discharges in the valley. Domestic waste disposal is by septic tanks and leach fields.

Bicarbonate is the dominant anion while sodium, calcium, and a combination of calcium and magnesium are the dominant cations. Concentrations of

dissolved solids are low and the waters are moderately hard. Moderate hardness was observed (100 ppm), however, this would not detract from present beneficial uses.

Significant Water Quality Changes

No significant water quality changes have been observed at this time.

SIERRA VALLEY (5-12)

Sierra Valley is located in southeastern Plumas and northeastern Sierra Counties. The irregularly shaped valley has a north-south length of about 18 miles and is approximately 12 miles in width. The alluviated area contains an estimated 165 square miles.

Monitoring Program

A monitoring program in Sierra Valley was begun in 1960 to observe ground water quality and to detect changes which might result from migration of poor quality waters present in the area. Samples were collected from 19 wells during September 1961 and from 18 wells in August 1962.

Ground Water Development

The basin is a structural depression formed by faulting, although volcanic activity appears to have contributed to the formation. All of the water-bearing sediments that now fill the basin are lacustrine in origin except for a thin veneer of stream deposited material on the surface of the valley floor. Some of the sediments are 2,500 feet in depth. Ground water is confined under thick sediments and flows under artesian pressure from many deep wells located in various areas of the valley. Ground water also appears in the form of mineralized thermal springs which apparently originate along the many fault zones. Ground water is moderately developed; however, yields are small.

Evaluation of Ground Water Quality

Ground water is used extensively for domestic and stock purposes. In some sections of the valley where soil conditions permit, ground water is

also used for irrigation. Disposal of domestic wastes occurs on an individual basis except for small municipal systems which are few in number. Industrial waste discharges at present are confined to overflows from mill ponds but appear to offer no serious problems to the ground waters at this time.

Ground waters in Sierra Valley display a wide variation in chemical quality. Around the periphery of the valley the water is usually of excellent mineral quality being calcium-magnesium bicarbonate in type and suitable for most beneficial uses. Two types of degraded waters (sodium bicarbonate and sodium chloride) occur in the west-central portion of the valley. The composition of the water indicates a magmatic origin and it is rising along fault zones known to exist in the valley. Various degrees of mixing between waters of good quality and degraded waters are in evidence around areas of thermal activity with several wells yielding water containing concentrations of iron, fluoride, and nitrate in excess of the criteria for domestic use.

The major water quality problem is the mingling of good quality waters with highly mineralized waters. This appears to be a local problem at the present but the situation could be aggravated by overdraft on the good quality ground waters.

Significant Water Quality Changes

Analyses from well 23N/14E-25G1 indicated a reduction in nitrates from 82 ppm in 1955 to 44 ppm in 1961 and 58 ppm in 1962. In 1961 well 22N/15E-12B1 contained 50 ppm nitrates as compared to 2.4 ppm the previous year and no nitrates found in 1962.

UPPER LAKE VALLEY (5-13)

Upper Lake Valley borders on the north shore of Clear Lake in Lake County. It extends about 7 miles north from the shore line and includes an area of about 16 square miles.

Monitoring Program

High concentrations of boron known to occur in ground waters in the western and southern portions of the valley prompted the establishment of a monitoring program in the area in 1953. Samples were collected from 13 wells during June 1961 and 12 during June 1962.

Ground Water Development

The principal aquifers in the area consist of alluvium and unconsolidated to poorly consolidated sediments deposited in the lake as it existed during Quaternary time. Ground water occurs in strata and lenticular beds of sand and gravel. Fine-grained lake sediments confine the aquifers in the lower portion of the valley. Ground water is moderately developed. Wells in areas of unconfined ground water have an average yield of about 350 gpm while those in the confined area yield about 230 gpm.

Evaluation of Ground Water Quality

Ground water is used primarily for irrigation, domestic, and stock watering purposes. There are no large waste discharges in the area. Several small domestic and industrial wastes, near the town of Upper Lake, are discharged into Scotts Creek or Middle Creek which flow into Clear Lake but have no apparent effect on the quality of ground water.

Ground waters in Upper Lake Valleys are generally calcium or magnesium bicarbonate in type, and with the exception of some moderately to very hard waters, are of good to excellent mineral quality.

Boron concentrations do not exceed the limits for Class 1 irrigation water, with the exception of a few scattered wells. Well 15N/10W-10E1 has shown boron in quantities as high as 70 ppm. Although this well produces water which is not representative of that now being found in the alluvium, it is included in the monitoring program because these poor quality waters constitute a threat to ground water quality in the area.

Significant Water Quality Changes

In 1961 and 1962 no significant changes from prior sampling were noted.

KELSEYVILLE VALLEY (5-15)

Kelseyville Valley is a gently rolling plain in Lake County. It is bordered by Clear Lake on the north, extends about 7 miles south from the shore line, and encompasses an area of approximately 30 square miles.

Monitoring Program

In order to detect any degradation of ground water by migration of waters containing higher concentrations of boron which occur in the area, a monitoring program was established in Kelseyville Valley in 1953. Samples were collected from 12 wells during the month of June 1961 and 11 wells in June 1962.

Ground Water Development

The principal aquifers are alluvium and unconsolidated to poorly consolidated lake sediments which were deposited during Quaternary time. Volcanic detritus also comprises a notable portion of the water-bearing sediments. Confinement occurs in aquifers beneath Clear Lake and extends about 1 mile beneath Kelseyville Valley. Ground water is extensively developed in the area. Well yields average approximately 450 gpm. Yields in the confined area are slightly higher than in the unconfined area.

Evaluation of Ground Water Quality

Ground water is used extensively for irrigation, domestic, and stock watering purposes. There are no large waste discharges in Kelseyville Valley. Communities are small and sewage disposal is largely by septic tanks and leach fields.

Ground waters in Kelseyville Valley are magnesium bicarbonate in type, and with the exception of high boron concentrations at some locations,

are of good to excellent mineral quality. Waters from most of the monitoring wells range from moderately to very hard.

Significant Water Quality Changes

Well 13N/9W-8N2 showed an increase in boron from 0.46 to 2.7 ppm since the 1961 sampling. Wells 13N/9W-8C1 and 13N/9W-16D2 exhibited significant increases in most constituents. Although water quality in these two wells is within acceptable limits, the results of future sampling will be carefully evaluated to determine if this trend is continuing.

SACRAMENTO VALLEY (5-21)

The Sacramento Valley area comprises about 5,000 square miles of valley floor land which extends northerly from the Consumnes River to the vicinity of the City of Red Bluff. It is bordered on the east by the Sierra Nevada and on the west by the Coast Range. Its ground water storage capacity, between the depths of 20 and 200 feet, is approximately 30,000,000 acre-feet.

Almost all of the Sacramento Valley is included in the ground water quality monitoring program. During 1961 and 1962 samples were collected primarily during the summer irrigation season. Ground waters are generally of excellent mineral quality and suitable for most beneficial uses. Quality problems are local. High concentrations of boron are found in Tehama, Colusa, Placer, and Yolo Counties. High concentrations of chlorides occur in southern Sutter County and in a few individual wells in Yuba and Placer Counties. The following sections discuss quality conditions in the Sacramento Valley by counties.

TEHAMA COUNTY

The monitored area in Tehama County extends from the Glenn and Butte County lines on the south to the vicinity of Red Bluff on the north. It is approximately 30 miles long, north to south, and varies in width from about 6 to 18 miles.

Monitoring Program

Tehama County was included in the monitoring program in 1957 to provide data, ground water quality conditions, and to detect any migration of waters containing high boron which are known to be present in the area. Samples were collected from 24 wells in the area during June 1961. and from 23 wells during June and July 1962.

Ground Water Development

Ground water occurs chiefly in formations of alluvial and/or volcanic origin, ranging from Pliocene to Recent age. The water-bearing formations, in order of decreasing age, are the Tuscan and Tehama formations, the Red Bluff gravels, and the Quaternary alluvium. Ground water is unconfined in the Quaternary alluvium; confined to partially confined in the Tehama and Tuscan formations and is moderately to extensively developed. Irrigation wells produce an average of 470 gpm.

Evaluation of Ground Water Quality

Ground water is used primarily for irrigation and domestic purposes. The only large waste discharges in Tehama County consist of effluent from the City of Red Bluff sewage treatment plant, and industrial waste from Diamond National Company both discharging into the Sacramento River. There is no apparent affect on the quality of ground waters.

Ground waters in Tehama County are generally of excellent mineral quality. They are soft to hard bicarbonate type waters with either calcium or magnesium the predominant cation, although each is rarely present in concentrations greater than 50 percent of the total cations. Irrigation well 25N/2W-21Q1, located 1 mile south of Los Molinos, has percent sodium in excess of recommended limits for class 1 irrigation water. Previous chemical analyses indicate iron concentrations that exceed the U. S. Public Health Service recommended limits for domestic purposes are present in some of the monitored ground water sources. There is evidence of high boron concentrations in ground waters to the north and east of the monitored area. Possible migration of these waters into areas of good water quality poses the most important threat to ground water quality in this area.

Significant Water Quality Changes

No significant water quality changes were detected in the 1961 and 1962 monitoring programs.

GLENN COUNTY

The monitored portion of Glenn County includes the valley floor area which lies, generally between the Sacramento River on the east and the Coast Range on the west. It is bounded on the north by Tehama County and on the south by Colusa County. It extends about 25 miles north to south and 15 miles east to west.

Monitoring Program

A monitoring program was established in this area in 1957 because of the importance of ground water to the economy of Glenn County. The 1961 monitoring program consisted of 23 wells which were sampled during August and of 24 wells sampled in July 1962.

Ground Water Development

The chief aquifers in this area are Quaternary alluvium and, in the northern portion, the Tehama formation. Recent alluvium, in turn, overlies the Tehama formation. The Stony Creek-Willow Creek alluvial plain and fan produces the largest quantities of ground water in the area. For the most part, ground water is unconfined although some confinement occurs in the Willows area.

Approximately 60 percent of the irrigation and virtually all of the municipal, industrial, and domestic water needs are met by ground water. Well yields range from only a few gpm in shallow domestic wells to 750 gpm in deep irrigation wells.

Evaluation of Ground Water Quality

Ground water is used for irrigation, municipal, industrial, and domestic purposes.

The largest waste discharges in Glenn County consist of effluent from sewage treatment plants serving the Cities of Orland and Willows. Other waste discharges come from various industrial establishments in the country. Final disposal is accomplished by discharge into streams, percolation ponds or in some instances, by reuse for irrigation purposes. Ord Bend Gas Field discharges about 2 gpm of highly saline water (13,700 to 15,400 ppm dissolved solids) directly to land surface. These waste discharges have no apparent affect on ground water quality.

Monitored ground waters of Glenn County are generally of excellent mineral quality. They are slightly hard to very hard, bicarbonate type waters with calcium or magnesium generally the predominant cation, although either is rarely in excess of 50 percent of the total cations. Previous analyses indicate iron concentrations are present in almost all monitored waters, with some concentrations in excess of U. S. Public Health Service recommended limits for domestic purposes.

Significant Water Quality Changes

Comparisons of the 1961 and 1962 analyses with those of 1960 indicated no significant basin-wide water quality changes. The 1961 chemical analysis of domestic well 18N/4W-2F1, located approximately 7 miles southwest of Willows, indicates a decreasing nitrate concentration.

COLUSA COUNTY

The monitored portion of Colusa County lies within the valley floor area. It is bounded on the east by Butte Creek and the Sacramento River and on the west by the Coast Range. The area extends from Glenn County on the north to Yolo County on the south, a distance of about 32 miles, and varies in width from 15 to 20 miles.

Monitoring Program

Due to the increasing utilization of ground water in Colusa County, a monitoring program was established in 1957. During 1961, samples were collected from 10 wells during the months of June and July and from 19 wells during July and August 1962.

Ground Water Development

The principal water-bearing formations in Colusa County are the Quaternary alluvium and the underlying Plio-Pleistocene Tehama formation. The Quaternary alluvium consists of Recent alluvium to a depth of 100 feet underlain by Pleistocene alluvium to a depth of 200 feet. Ground water in this area is generally unconfined or partially confined and is extensively developed, supplying nearly all water requirements. Large irrigation wells produce over 500 gpm.

Evaluation of Ground Water Quality

Ground water is used for domestic, municipal, and irrigation supplies. Waste discharges in Colusa County primarily are effluent from sewage treatment plants serving the cities or communities of Colusa,

Maxwell, Williams, and Arbuckle. Minor waste discharges emanate from small industries such as dairies and slaughter houses. Final disposal of these wastes is accomplished by discharge into canals or creeks and thence into the Sacramento River. They have no apparent affect on quality of the ground water.

Analyses of ground waters in Colusa County indicate they are soft to very hard bicarbonate type waters with sodium generally the pre-dominant cation and mineral quality varying from good to poor. There are several areas in the county that contain degraded ground waters. High percent sodium is found generally in the vicinity of the Sacramento River near the City of Colusa. High boron concentrations are found near the City of Arbuckle. High boron, combined with high electrical conductance and high chlorides are found in the vicinity of College City. Waters containing high iron concentrations are found in both the northern and southern portions of the monitored area.

Significant Water Quality Changes

From June 1960 to June 1961, chemical analyses of samples from two wells, located south of Arbuckle, showed significant changes in boron concentrations. Well 13N/2W-10G1 decreased in boron from 2.8 to 2.2 ppm, and well 13N/2W-10M1 increased in boron from 0.9 to 1.2 ppm. During the same period, chemical analyses of well 14N/1W-2D1, located approximately 3.5 miles northwest of Grimes, indicate electrical conductance, total dissolved solids, and chlorides increased from 746 to 1,380, 451 to 820 ppm, and 87 to 230 ppm, respectively.

BUTTE COUNTY

The monitored portion of Butte County extends from Tehama County on the north to Sutter County on the south, and from the Sacramento River and Butte Creek on the west to the foothills of the Sierra Nevada on the east. The north to south length of the area is approximately 40 miles and width varies from about 10 to 20 miles.

Monitoring Program

Due to the importance of ground water in the economy of Butte County, a monitoring program was established in the area in 1957, to establish the general quality conditions of ground water in the area. Samples were collected from nine wells during August and September, 1961 and during the summer of 1962.

Ground Water Development

Ground water occurs chiefly in Quaternary alluvium and in the Tuscan formation. The alluvium is composed of Recent and Pleistocene gravels, sands, and clays in variable mixtures. The Tuscan formation is of volcanic origin and dips westerly beneath the alluvium at a low angle. Although generally considered to be unconfined, there is evidence of local partial confinement in the area. Ground water is moderately developed in Butte County. Large irrigation wells located in the central portion of the monitored area produce up to 1,000 gpm. Wells located along the Sacramento River produce about 400 gpm.

Evaluation of Ground Water Quality

The ground waters of Butte County are used for most beneficial purposes, of which irrigation is the largest. The major waste discharges

in Butte County consist of effluent from sewage treatment plants located near the Cities of Oroville, Chico, and Gridley. The plants located in the Oroville and Gridley areas discharge the treated waste waters to the Feather River. The waste water from the plant in Chico is reused for irrigation or discharged to percolation ponds. There is no apparent affect on ground water quality.

Ground waters of Butte County are generally a slightly to moderately hard bicarbonate type with the predominant cation being magnesium or a combination of magnesium and calcium in nearly equal proportions. The sodium percentage is uniformly low, generally less than 30 percent, and total dissolved solids are usually below 400 ppm. In general, the mineral quality is excellent throughout the monitored area, with the exception of well 18N/4E-28M. Water from this well is a sodium sulfate type with high total dissolved solids, 1,430 ppm, boron 5.6 ppm, sulfates 555 ppm, and sodium percentage 90.

Significant Water Quality Changes

1962 analyses revealed 72 ppm nitrate in well 22N/1E-9M, compared to 15 ppm reported in 1961.

SUTTER COUNTY

Almost all of Sutter County is included in the ground water quality monitoring program. The county, bounded generally by the Feather River on the east and the Sacramento River on the west, is situated entirely within the Sacramento Valley and is, for the most part, underlain by water-bearing deposits.

Monitoring Program

High chloride concentrations in local areas prompted the inclusion of Sutter County in the monitoring program in 1953. During 1961 samples were collected from 31 wells during June and July, and 31 in June and September of 1962.

Ground Water Development

The principal source of ground water is alluvium which was deposited during Pleistocene to Recent times. In the eastern portion of the area Pliocene volcanic sands and gravels comprise the main producing aquifer for deep wells. In general, the aquifers are unconfined although partial confinement occurs in some area.

Ground water is extensively developed, which has resulted in an overdraft of the ground water supply. Wells west of the Feather River yield an average of about 800 gpm. Wells, south of the Bear River, yield about 950 gpm.

Evaluation of Ground Water Quality

Ground water is used primarily for irrigation and domestic purposes. The principal waste discharge in Sutter County consists of effluent from the Yuba City sewage treatment plant. This waste is discharged into the Feather

River during the winter, when the river is at high stage, and into percolation-evaporation ponds during the summer. There is no apparent affect on the quality of ground water.

Ground waters of Sutter County are generally bicarbonate in type with magnesium the predominant cation. High concentrations of sodium and chloride are found in an area south of Yuba City and also in the vicinity of Robbins. In these same areas boron concentrations in excess of 0.5 ppm occur. The source of this mineralization is probably entrapped evaporatives or rising conate brines. Ground waters in the remainder of the monitored area are of good to excellent mineral quality, although waters in the majority of the monitored wells were very hard.

Significant Water Quality Changes

Water examined in 1961 from well 15N/2E-26D2 indicated an increase in most constituents. Between June 1960 and June 1961, specific conductance increased from 688 to 1,040 micromhos, nitrates from 29 to 73 ppm in 1961 and 86 ppm in 1962, and total hardness from 294 to 444 ppm. Well 15N/3E-4C2 also produced water with high nitrates, 51 ppm, although nitrates of 63 ppm were observed in 1958, this well displayed significant increases in most constituents, total dissolved solids increased from 516 ppm in 1961 to 913 ppm in 1962.

YUBA COUNTY

The portion of Yuba County included in the monitoring program is located in the east central portion of the Sacramento Valley. It is bounded by Sutter County on the west and the foothills of the Sierra Nevada on the east. This valley floor portion of the county varies between 8 and 12 miles in width and has a maximum length of about 25 miles.

Monitoring Program

The monitoring program in Yuba County was begun in 1958 to maintain a check on ground water quality and detect significant changes in quality which might result from migration of saline waters known to underlie the area at depth. Samples were collected from 14 wells in this area during September 1961 and 16 in August of 1962.

Ground Water Development

The principal sources of ground water include unconsolidated Quaternary alluvium underlain by a late Tertiary formation composed of volcanic ash and water-laid volcanics. Pleistocene alluvium, exposed toward the foothills, is an important local source of ground water. The larger and deeper wells of the area derive water from both the alluvium and the volcanics. Saline waters occur beneath the fresh waters. Ground water is confined only in the deeper zones and in local areas. Ground water in Yuba County is extensively developed. The average yield of wells is about 850 gpm, with a few wells producing up to 2,000 gpm.

Evaluation of Ground Water Quality

Ground water is used primarily for irrigation, domestic, and municipal supplies. The principal waste discharges in Yuba County consist of effluent

from sewage treatment plants serving Marysville and Linda. The waste from the Marysville plants is discharged into evaporation-percolation ponds; effluent from the Linda plant is discharged into the Feather River. Waste discharges have no apparent affect on the quality of ground water.

Ground waters of Yuba County are generally bicarbonate in type, with low mineral concentrations. Analyses of the water from well 13N/5E-4B, the municipal water supply for the City of Wheatland, indicate a very hard water with concentrations of chloride up to 300 ppm. A possible source of the chlorides is the saline water body which underlies the fresh water at depth. Ground waters in the remainder of the monitored area are of good to excellent mineral quality, although ranging slightly hard to very hard.

Significant Water Quality Changes

No significant changes in ground water quality occurred during this period.

PLACER COUNTY

The monitoring program in Placer County comprises most of the valley floor portion of the county. The area is about 13 miles in width and extends approximately 20 miles north to south.

Monitoring Program

A monitoring program was initiated in 1957 because of the importance of ground water to Placer County and due to the presence in the area of highly mineralized waters. Samples were collected from 18 wells in July 1961 and in August 1962.

Ground Water Development

The main water-bearing formation in Placer County is the older alluvium, composed mostly of silt, clay, sand, sandstone, and smaller amounts of gravel. Alluvium of slightly younger age but of similar composition overlies the old alluvium to a maximum thickness of about 50 feet. Volcanic detritus as well as breccias and tuffs underlie the alluvium. A few wells southwest of Lincoln obtain water from the Ione formation, a marine deposit of Eocene age.

Ground water is extensively developed in Placer County. Wells located near the western boundary of the county which are drilled in the old alluvium, yield as high as 1,800 gpm. Wells penetrating the volcanic rock yield up to 1,200 gpm, and those in the Ione formation produce about 100 gpm.

Evaluation of Ground Water Quality

Ground water in Placer County is used primarily for irrigation. Other uses are domestic and industrial. The principal waste discharges consist of effluent from sewage treatment plants serving the Cities of Roseville

and Auburn. Minor quantities of waste emanate from various mining operations. All major sources of waste are discharged into streams and do not presently threaten ground water quality.

Ground waters in Placer County are generally bicarbonate in type with sodium the predominant cation. With the exception of local areas in the vicinity of Lincoln and Sheridan, the water is of excellent mineral quality, slightly hard, generally with less than 300 ppm total dissolved solids. Waters in the Lincoln and Sheridan areas are derived from connate waters of the Ione formation and as a result contain up to 1,010 ppm total dissolved solids, including high concentrations of chlorides, boron, and sodium.

Significant Water Quality Changes

A comparison of values for samples collected in 1961 and 1962 show that in wells 12N/6E-16D2 and 13N/6E-33C1, significant decreases in boron content occurred from 1.3 to 0.1 ppm and 2.5 to 0.2 ppm, respectively. Well 13N/6E-33C1 also showed significant decreases in total dissolved solids and chloride content.

YOLO COUNTY

The monitored area in Yolo County in addition to that portion of the Sacramento Valley floor area in Yolo County, includes the Capay Valley which extends along Cache Creek from the town of Capay northwesterly to Rumsey in the western portion of the county. The area covers mainly the eastern half of Yolo County and is situated in the southwestern portion of the Sacramento Valley. The total monitored area comprises about 650 square miles.

Monitoring Program

Due to the presence of boron in the area, a monitoring program was established in Capay Valley in 1953. During 1957, the program was expanded to include the present monitored area, which is highly developed agriculturally. During July 1961 and in 1962 samples were collected from 46 wells.

Ground Water Development

The principal sources of ground water are the stream channel and terrace deposits composed of unconsolidated silt, sand, and gravel of Recent age. The Tehama formation, of Plio-Pleistocene age and continental origin, is a secondary aquifer. Ground water in the alluvial deposits is unconfined and the Tehama formation is locally confined. In Capay Valley only the Recent stream channel and terrace deposits are important as ground water sources. Ground water in Yolo County is moderately developed. Wells in the Sacramento Valley portion of the area yield up to 3,000 gpm. In Capay Valley the wells are primarily shallow, domestic wells producing up to 60 gpm.

Evaluation of Ground Water Quality

Ground water is used for irrigation, domestic, and stock watering purposes. The principal waste discharges in Yolo County consist of effluent from sewage treatment plants at Woodland, Davis, and West Sacramento. Disposal of these waste waters is by discharge to surface water and to percolation ponds, however, a portion of the treated waste water from the Woodland plant is used for irrigation.

Ground waters of Yolo County are predominantly bicarbonate in type, with magnesium and/or sodium the principal cations. The ground waters are generally very hard, with total hardness ranging up to 1,125 ppm.

The most serious quality problem throughout the county is the presence of boron in concentrations considered injurious to crops. The waters are generally class 2 or 3 for irrigation, mainly due to boron content. These high boron concentrations are believed to be derived from Cache Creek, which is known to contain high boron. High concentrations of chloride, ranging up to 700 ppm occurred adjacent to the Sacramento River and in other local areas.

Significant Water Quality Changes

Boron content in well 10N/1W-36K2 has increased from 2.62 ppm in 1960 to 7.9 ppm in 1962. Boron concentrations varied throughout the county, in 1961 boron concentrations were slightly higher and in 1962 about the same as in 1960.

SACRAMENTO COUNTY

Most of Sacramento County is included in the monitoring program. Excluded is a small area in the Sacramento-San Joaquin Delta where little ground water is used, also an area along the eastern boundary which is underlain by geologic formations that yield negligible quantities of ground water. The total monitored area includes approximately 450 square miles.

Monitoring Program

A monitoring program was established in Sacramento County in 1955 to record ground water quality and to detect changes in quality that might result from ground water overdraft or from industrial wastes which occur in the eastern portion of the county. Samples were taken from 32 wells in the area during July-September 1961 and 17 during August 1962.

Ground Water Development

Recent alluvium and semiconsolidated Plio-Pleistocene continental sediments comprise the principal aquifers. Tertiary volcanics are of local importance in the eastern portion of the county. The aquifers generally are unconfined, although perched water formations occur locally. Ground waters in Sacramento County are moderately developed except in areas adjacent to the Sacramento River where ground water development is minimized by the availability of surface water. The average yield from wells in Sacramento County is approximately 400 gpm.

Evaluation of Ground Water Quality

Ground waters in Sacramento County are used primarily for irrigation, domestic, municipal, and industrial purposes. The principal waste

discharges consist of effluent from the City of Sacramento, Mather and McClellan Air Force Bases, Aerojet-General Corporation, and Libby, McNeill & Libby plant. Wastes from the City of Sacramento and the Air Force bases are discharged to surface waters while wastes from Aerojet-General and Libby are discharged to dredger tailings in the eastern portions of the county. Analyses of ground water samples near the waste discharges have included tests for perchlorate and ammonium in addition to the usual mineral analyses.

Ground waters in Sacramento County are primarily calcium-magnesium bicarbonate in type and, although slightly to moderately hard, are of excellent mineral quality. Total dissolved solids are relatively low, seldom exceeding 350 ppm. Boron, chlorides, and nitrates are uniformly low and well within recommended limits.

Significant Water Quality Changes

No significant changes in ground water quality were observed during this period.

SOLANO COUNTY

This area comprises all of the northern and eastern portions of Solano County which lie in the Sacramento Valley. It extends from Putah Creek on the north to the Sacramento River on the south, and includes an area of approximately 400 square miles. The remainder of Solano County lies in Region 2 and was discussed previously in this report as Suisun-Fairfield Valley.

Monitoring Program

The monitoring program in Solano County was begun in 1958 to observe the ground water quality and to detect changes which might result from migration of poor quality waters known to be present in the area. Samples were collected from ten wells during September of 1961 and nine wells in May of 1962.

Ground Water Development

Water-bearing formations in this area include younger alluvium, consisting of stream channel and flood plain deposits; older alluvium, comprised of fine-grained sediments enclosing lenses and bodies of coarse materials; the Tehama formation; and Tertiary volcanic sedimentary rocks. The Tehama formation extends to a depth of 1,500 to 2,500 feet. The volcanics, comprised of a sequence of shale, sandstone, and conglomerate underlie the Tehama formation. Ground water is partially confined, the degree of confinement increasing with depth. Ground waters in Solano County are moderately to extensively developed. Well yields range from less than 100 to approximately 1,000 gpm.

Evaluation of Ground Water Quality

Ground water is used for irrigation, domestic, and other purposes. The principal waste discharges in this area consist of sewage effluent from Vacaville which is discharged into Alamo Creek, and from Rio Vista which is discharged into the Sacramento River. They have no apparent affect on ground water quality.

Ground waters in the monitored area are generally a very hard bicarbonate type with calcium and magnesium the predominant cations. Sodium is prevalent in the southern portion. The waters are generally class 2 for irrigation, due to conductivity and boron concentrations. Moderately high dissolved solids and boron concentrations occur in the northern and western portions of the monitored area.

Significant Water Quality Changes

There has been a noticeable fluctuation of percent sodium in well 5N/2E-25K since 1958. Nitrates increased from 15 to 54 ppm in well 6N/1E-19L2 in 1962.

SAN JOAQUIN VALLEY (5-22)

The San Joaquin Valley floor comprises about 10,000 square miles of irrigable lands and extends from the Tehachapi Mountains northward to the vicinity of the Cosumnes River. Underlying this valley is the largest ground water reservoir in the State. The storage capacity of this great reservoir, to a depth of 200 feet below land surface, has been estimated to be 100,000,000 acre-feet. A bed of diatomaceous clay, generally known as the Corcoran clay, continuous throughout most of the San Joaquin Valley, separates this reservoir into upper and lower ground water zones. This clay bed is about 40 to 50 feet thick and lies generally between 300 to 350 feet below the land surface. Wells in the western portion of the valley draw water principally from the lower zone, bypassing the poor quality of most upper zone waters in that area. Wells in the remainder of the valley produce good quality waters from both zones. Most of the San Joaquin Valley has been included in the monitoring program and is reported herein by counties.

SAN JOAQUIN COUNTY

The area of San Joaquin County included in the monitoring program comprises most of the valley floor portion of the county. The monitored area extends from the Sacramento County line on the north to the Stanislaus County line on the south, and varies in width from about 14 to 30 miles.

Monitoring Program

In 1953 a monitoring program was established in San Joaquin County to detect degradation of ground waters by migration of poor quality waters, which are located primarily in the western part of the county. During July and August 1961, water samples were collected from 32 wells and from 30 wells during July 1962.

Ground Water Development

The principal sources of ground water are unconsolidated Recent alluvium and semiconsolidated Tertiary and Quaternary continental sediments. In the eastern portion of the county the Mehrten formation is also an important aquifer. Ground water is generally unconfined, except in the vicinity of Tracy, where a deep zone is confined by the Corcoran clay. The general movement of ground water is from east to west, except across the Delta, where it is impeded by fine-grained deposits. Ground water is moderately to extensively developed. Wells in the Mehrten formation are reported to produce up to 1,300 gpm, while those in the alluvial sediments produce about 3,000 gpm.

Evaluation of Ground Water Quality

Approximately 70 percent of the water pumped is used for irrigation. The remaining portion is used mainly for industrial and domestic purposes. The principal waste discharges in San Joaquin County consist of effluent from sewage

treatment plants at or near the Cities of Escalon, Stockton, Lodi, Manteca, Tracy, and Lincoln Village. All of the sewage treatment plants dispose of their waste waters to nearby surface waters except for the plant at Escalon which uses percolation ponds for disposal. Waste discharges have no apparent effect on quality of ground waters.

Ground water in the San Joaquin County varies in type and mineral quality depending upon location and depth. Wells less than 1,000 feet deep, located east of Stockton, generally yield water suitable for both domestic and agricultural purposes. The water is bicarbonate in type with calcium the predominant cation. Chloride and boron are usually well within the limits for class 1 irrigation waters.

Saline water apparently underlies most of the county at varying depths. The saline water body is very deep along the eastern edge of the area, about 2,000 feet beneath the ground surface in the vicinity of Linden, becoming shallower toward the west, reaching a depth of about 1,000 feet in the Stockton area. Poor quality water underlies the central Delta portion of the county at a depth of less than 100 feet. Impediment of ground water movement due to fine-grained Delta deposits appears to have effectively prevented movement of poor water into the fresh water underlying the eastern portion of the county.

Significant Water Quality Changes

Boron concentration showed an increase in wells 1N/4E-3N1 and 1S/6E-4A1 from 0.13 to 1.2 ppm and 0.16 ppm respectively while a decrease in boron content from 1.9 to 0.2 ppm was noted in well 2N/6E-27L1.

STANISLAUS COUNTY

The monitored portion of Stanislaus County includes most of the valley floor lands in the county, and comprises an area of about 1,000 square miles. It extends approximately 50 miles from north to south and approximately 40 miles from east to west and covers the eastern three-fourths of the county.

Monitoring Program

Stanislaus County was included in the monitoring program in 1957 due to the presence of ground waters containing high concentrations of total dissolved solids and boron. During the period July-September 1961, samples were collected from 48 wells and for the same period in 1962 samples were collected from 49 wells.

Ground Water Development

Principal water bearing units in Stanislaus County consist of alluvial deposits laid down by the Stanislaus, Tuolumne, and San Joaquin Rivers. These deposits are composed predominantly of unconsolidated silt, sand, and gravel. Older formations, of continental origin, are locally important aquifers in and near the eastern foothills. The western portion of the monitored area is underlain by the Corcoran clay which separates the ground water reservoir into two water-bearing zones. Movement of ground water in the county is toward the San Joaquin River.

Evaluation of Ground Water Quality

Ground water in Stanislaus County supplies water for most beneficial uses. Major waste discharges in Stanislaus County consist of effluent from

sewage treatment plants in Modesto, Oakdale, Newman, Patterson, Riverbank, and Turlock, along with wastes from Beard Land and Investment Company (Modesto), and Turlock Cooperative Growers Cannery. At Modesto and Beard Land Company, wastes are discharged to infiltration ponds with overflow to the Tuolumne River. Oakdale and Riverbank discharge wastes to infiltration ponds with overflow to the Stanislaus River during the peak of the cannery season. Patterson and Turlock Cooperative Cannery use infiltration ponds for disposal while discharges from Newman and Turlock flow into the San Joaquin River.

Ground water in the monitored area east of the San Joaquin River is predominantly calcium and sodium bicarbonate in type and is of good mineral quality. Gas wells east of Modesto discharge a very saline water, indicating the character of the underlying water body. West of the San Joaquin River, from Patterson to the San Joaquin County boundary, ground water is sodium chloride in type and is of poor quality. Along with chlorides, high sulfate and boron concentrations are prevalent in this area. South of Patterson, ground water generally is very high in sulfates and is of poor quality, with the exception of the area around Newman where ground water is principally calcium bicarbonate type and of good mineral quality. Ground water in the county ranges from soft to slightly hard in the eastern portion of the monitored area to very hard in the western portion.

Significant Water Quality Changes

The quality of ground water in well 4S/7E-16E1, located approximately 10 miles west of Modesto, deteriorated considerably between 1960 and 1961. In this well, boron increased from 2.4 to 4.1 ppm with substantial increases being noted in specific conductance, total dissolved solids, and

chlorides. Well 5S/8E-8G1, located approximately 4 miles north of Patterson, has shown a steady improvement in quality since 1958. Sulfates in this well decreased from 377 ppm in 1960 to 295 ppm in 1961. Well 5S/8E-1R1 showed a marked improvement in quality between 1960 and 1961 with substantial reductions being noted in specific conductance, chlorides, and boron.

MERCED COUNTY

The monitored area of Merced County includes that portion of the county lying on the valley floor between the foothills of the Sierra Nevada and the base of the Diablo Range. It extends approximately 50 miles from north to south and approximately 60 miles from east to west and encompasses a total area of about 1,250 square miles.

Monitoring Program

The ground water quality monitoring program was established in Merced County in 1957 for surveillance of water quality conditions and to detect possible migration of highly mineralized ground waters which occur near the trough of the valley. Samples were collected from 48 wells during the period June-September 1961 and from 51 wells during the same period in 1962.

Ground Water Development

The principal source of ground water in Merced County is alluvium consisting of unconsolidated silt, sand, and gravel, underlain by formations of continental origin. The Corcoran clay underlies the central portion of the county and divides the ground water reservoir into an upper and a lower water bearing zone. In general, soil underlying Merced County is slightly permeable resulting in poor drainage. Movement of ground water generally follows the slope of the land surface toward the San Joaquin River. Ground water is only moderately developed in Merced County. In general, the portion of the area lying east of the San Joaquin River obtains a larger proportion of its needs from ground water than the area west of the river.

Evaluation of Ground Water Quality

Ground water is used extensively for municipal and industrial purposes and to a lesser extent for irrigation and domestic needs. Principal waste discharges in Merced County consist of effluent from sewage treatment plants at Merced, Atwater, Gustine, Los Banos, and at Castle Air Force Base. Effluent from the Merced plant is discharged into Miles Creek. The plants at Atwater, Gustine, and Los Banos dispose of their wastes to infiltration ponds while the Castle Air Force Base plant discharges to Canal Creek.

East of the San Joaquin River, ground water is predominantly calcium and sodium bicarbonate in type and generally of good mineral quality; however, nitrate concentrations up to 40 ppm exist locally. In the trough of the valley, adjacent to the San Joaquin River, ground water is sodium chloride and sodium sulfate in type and is generally of poor mineral quality. In the western portion of the monitored area, ground water is principally a calcium-sodium bicarbonate type with the quality ranging from fair to good. Total hardness throughout the monitored area varies from soft to very hard with the hard water being prevalent west of the San Joaquin River.

Significant Water Quality Changes

Well 6S/10E-28K1, located approximately eight miles west of Livingston, has steadily improved in quality since 1957. Specific conductance in this well changed from 742 to 566 micromhos between 1960 and 1961. Nitrate concentrations increased in well 6S/11E-9C1, near Delhi, from 26 to 47 ppm, and in well 6S/12E-6L1, located four miles north of Livingston, from 28 to 57 ppm between 1960 and 1961.

MADERA COUNTY

The western third of Madera County which includes all of the valley floor area, comprises the monitored area. It extends approximately 30 miles from north to south, about 40 miles from east to west, and covers about 950 square miles.

Monitoring Program

Madera County was included in the monitoring program in 1957, due to high concentrations of chloride and high sodium percentages in the extreme western portion of the county. During July 1961, 29 wells were sampled and 31 during the period June-August 1962.

Ground Water Development

Principal water bearing units in Madera County are alluvial deposits laid down by the San Joaquin and Chowchilla Rivers. Generally, soils throughout the county are highly permeable. The Corcoran clay underlies approximately the western two-thirds of the monitored area and separates the ground water reservoir into an upper and a lower zone, with most of the monitored wells drawing from the upper zone. Movement of ground water in the county is generally in a southwesterly direction toward the valley trough. Ground water is extensively developed for irrigation in areas where surface water is not readily available.

Evaluation of Ground Water Quality

Ground water is used beneficially for domestic, municipal, industrial, and irrigation supplies. Major waste discharges in Madera County

consist of effluent from sewage treatment plants located at the Cities of Chowchilla and Madera. The sewage treatment plant at Chowchilla disposes of waste water by means of infiltration ponds and irrigation. Waste water from the treatment plant at Madera is reused for irrigation.

Ground water in Madera County is predominantly calcium-sodium bicarbonate in type and is generally of excellent mineral quality with the exception of the area between the San Joaquin River and Lone Willow Slough. Of the four monitored wells in this area, three are very high in percent sodium and the fourth is extremely high in chlorides, total dissolved solids, and specific conductance. Throughout the monitored area, ground water generally is slightly to medium hard with very hard water being found in a few of the wells on the west side.

Significant Water Quality Changes

In well 11S/14E-1A1, located 13 miles southwest of Chowchilla, bicarbonate doubled from 170 to 340 ppm with substantial increases in specific conductance and total dissolved solids. In wells 10S/15E-31A1, 11S/14E-5B1, and 11S/14E-16A1, the quality has been steadily deteriorating since 1957 but not to the extent of rendering it unsatisfactory for required uses.

FRESNO COUNTY

Most of the valley floor area in Fresno County is included in the monitoring program. This area extends from the foothills of the Sierra Nevada on the east to the base of the Diablo Range on the west, and from the San Joaquin River on the north to the Kings County line on the south. The total area is approximately 2,500 square miles.

Monitoring Program

The monitoring program was established in Fresno County in 1953 due to the presence of mineralized ground water in the western portion of the county. No samples were collected in 1961, but during the period April-October 1962 samples were collected from 70 wells.

Ground Water Development

Ground waters on the east side of Fresno County occur in coalescing alluvial fan and plain deposits derived from the Sierra Nevada. These fan deposits are coarse-grained where the streams enter the valley and grade to finer sediments downslope. Wells tapping these deposits generally yield good quality water. The Corcoran clay underlies the western side of the county and separates the ground water reservoir into an upper and a lower zone. The upper zone consists of alluvial fan and plain deposits that interfinger with lake deposits while the lower zone consists of lenticular beds of clay, silt, and sand. Most of the monitored wells in the western area are drawing from the lower zone. Saline waters underlie the west side area at depths ranging from about 1,000 to 3,000 feet. Ground water in Fresno County is extensively developed, resulting in lowering of the water table in areas of inadequate surface water supply. Wells in both the upper and lower zones yield about 1,300 gpm.

Evaluation of Ground Water Quality

Ground water is used for irrigation, industrial, domestic, and stock watering purposes. Major waste discharges consist of effluent from sewage treatment plants in Fresno, Reedley, Clovis, Kingsburg, Sanger, and Selma, and from the valley Nitrogen Products Company near Helm. Discharges from plants at Fresno and Reedley are partially used for irrigation with the remainder going to percolation ponds. Effluent from plants in Clovis, Kingsburg, and Sanger is discharged into percolation ponds; Selma's waste discharge is used for irrigation. Waste discharge from the Valley Nitrogen Products Company is disposed to ponds with cooling water discharge going into Wheaton Slough. Oil field wastes at Raisin City are injected into the underlying saline water body at a depth of more than 1,500 feet.

Ground water in the eastern portion of the monitored area is principally calcium bicarbonate in type and of excellent mineral quality. In the central and western portions, ground water in the upper zone contains high concentrations of calcium and magnesium sulfate and is unsuitable for most uses. Lower zone water in this area is primarily sodium sulfate in type of good quality; however, there is apparently some degradation of lower zone water due to upper zone water being admitted through improperly constructed wells or discontinuities in the separating Corcoran clay layer.

Significant Water Quality Changes

No significant changes in trends or characteristics were observed when comparing 1962 samples with the prior record.

TULARE COUNTY

The monitored portion of Tulare County includes the valley floor area lying between the foothills of the Sierra Nevada and the Kings County line, and comprises an area of about 1,400 square miles. It extends approximately 60 miles from north to south and approximately 30 miles from east to west and covers the western one-third of the county.

Monitoring Program

Tulare County was included in the monitoring program in 1957 to maintain surveillance on ground water quality and to detect significant changes. During the period April-August 1961, samples were collected from 33 wells and from 35 wells during the period June-September 1962.

Ground Water Development

Most of the monitored area in Tulare County consists of low alluvial plains and fans with the exception of the southwest corner which is part of the overflow lands surrounding the Tulare Lake bed. Soils covering these overflow lands contain a high percentage of clay and silt and are slightly permeable and highly alkaline. Ground water in the remaining area occurs in a series of poorly connected beds and lenses of sand and gravel, locally confined by silt and clay with the notable exception of the Corcoran clay. This clay underlies the western sector of the monitored area and separates the ground water reservoir into two water bearing zones. Ground waters below the Corcoran clay are considered to be confined while those above the clay layer are unconfined or only locally confined. Ground water is extensively developed for irrigation in Tulare County, however, there is a plentiful supply of surface water and in some areas both are used.

Evaluation of Ground Water Quality

Ground water is used beneficially for irrigation, industrial, municipal, and domestic purposes. Major waste discharges in Tulare County consist of effluent from sewage treatment plants in Visalia, Tulare, Porterville, Dinuba, Lindsay, and Exeter. These plants dispose of waste water by infiltration and irrigation.

North of Porterville, ground water is principally calcium-sodium bicarbonate in type and is generally of good mineral quality. However, in the southern part of the county, particularly the southwest, ground water is very high in percent sodium and is generally of poor mineral quality. High nitrates were found in three monitored wells located on the east side of the monitored area. Well 18S/26E-10N, located approximately nine miles northwest of Visalia, had a nitrate concentration of 78 ppm. Ground water north of Visalia is generally very hard; while south of Visalia, total hardness ranges from soft to medium hard.

Significant Water Quality Changes

Well 17S/23E-8H1, located one mile north of Traver, has been steadily deteriorating in quality since 1958. Total dissolved solids in well 20S/26E-5R1, located six miles west of Lindsay, have increased from 376 to 529 ppm with specific conductance and chlorides also showing substantial increases. In well 21S/27E-15P2, located 5 miles north of Porterville, sodium increased considerably resulting in a change in percent sodium from 25 to 71 between 1960 and 1961. Nitrate in this well also showed a large increase from 13 to 52 ppm during this same period.

KINGS COUNTY

All of Kings County, 1,395 square miles in area, is included in the monitored area. Most of Kings County consists of low lying lands in the trough of the valley and includes the Tulare Lake bed.

Monitoring Program

Kings County was included in the monitoring program in 1958 due to high concentrations of mineral constituents in the ground water. Twenty-two samples were collected during August 1961 and 26 during August 1962.

Ground Water Development

Principal water bearing units in Kings County consist of alluvial deposits washed into the valley from the coastal ranges and from the Sierra Nevada. In the Tulare Lake area, such deposits are predominantly heavy and impervious; whereas, in the remaining portion of the county, they are generally quite permeable and well drained. The Corcoran clay underlies most of the monitored area and separates the ground water reservoir into an upper and a lower water bearing zone. Ground water in Kings County is extensively developed.

Evaluation of Ground Water Quality

Ground water in Kings County is used for irrigation, industrial, municipal, and domestic purposes. Major waste discharges in Kings County include effluents from sewage treatment plants in Hanford, Corcoran, Lemoore, and Lemoore Naval Air Station. Waste discharges from the Hanford, Corcoran, and Lemoore plants are reclaimed for irrigation or discharged to infiltration ponds. Lemoore Naval Air Station discharges its waste, after treatment, into the South Fork of the Kings River.

Ground water quality throughout Kings County is generally poor with the exception of the northeast corner where it is principally calcium bicarbonate in type and its quality is generally good. On the western side of the county, ground water is predominantly sodium sulfate in type and is of poor quality. Sulfates, in this area, are very high. Throughout the central and eastern portions of the county, ground water is sodium bicarbonate and sodium chloride in type and is generally very high in percent sodium. Total hardness varies from soft to slightly hard in the northern half of the county to very hard in the southern half.

Significant Water Quality Changes

In well 20S/21E-12A1, near Guernsey, specific conductance increased from 853 to 1,000 micromhos at 25° C between 1960 and 1961, with chlorides and total dissolved solids also showing substantial increases. Chlorides in well 22S/19E-20N, near Kettleman City, increased from 124 to 204 ppm between 1960 and 1961 with specific conductance and total dissolved solids increasing proportionately.

KERN COUNTY

The monitored area of Kern County includes that portion of the county within the San Joaquin Valley. It extends approximately 60 miles from north to south and approximately 35 miles from east to west and covers an area of about 2,200 square miles.

Monitoring Program

A monitoring program was established in 1953 to maintain surveillance on the effects of waste water from Edison and Devils Den oil fields, with the remaining portion added to the program in 1957. During the period June-August 1961, samples were collected from 57 wells and from June-September 1962, 71 samples were collected.

Ground Water Development

Principal water bearing formations in Kern County are poorly-sorted alluvial deposits, and fine-grained lake sediments in the overflow lands of Goose, Buena Vista, and Kern Lake beds. Soils throughout the monitored area are generally highly permeable with the exception of these overflow lands. The Corcoran clay separates the ground water reservoir into an upper and a lower zone. Movement of ground water north of Bakersfield is generally in a northwesterly direction, while ground water in the southern portion moves principally in a southwesterly direction toward Buena Vista and Kern Lake beds.

Kern County has the second largest area of irrigation lands of any county in the State, with a large portion of this supply being drawn from

ground water. In areas where surface water is not readily available, ground water is being used to such an extent that the ground water table has fallen consistently.

Evaluation of Ground Water Quality

Ground water is being used beneficially for irrigation, industrial, municipal, and domestic purposes. Principal waste discharges consist of effluent from sewage treatment plants at Bakersfield, Wasco, Oildale, McFarland, Delano, Taft, and Arvin. These discharges are used almost entirely for irrigation.

Ground water quality throughout the monitored portion of Kern County varies widely. On the western side of the monitored area, ground waters are saline and poor in quality. High boron concentrations are present in several of the west-side monitored wells while lithium concentrations up to 1 ppm have also been detected in selected wells on the west side. In the eastern portion of the monitored area, ground water is principally calcium-sodium-bicarbonate type and is generally good in quality; however, high chloride and sulfate concentrations are present locally throughout this area. The apparent source of these high concentrations are deep-lying bodies of connate water. Very high sulfate concentrations occur in wells in the extreme southern part of the monitored area. Wells 29S/28E-36J1, 30S/29E-5D2, and 30S/29E-27J1, located near Edison, have extremely high nitrate concentrations of 138, 151, and 105 ppm, respectively. Ground water throughout the monitored area is generally very hard with the exception of the northeastern corner of the county, where total hardness ranges from soft to slightly hard.

Significant Water Quality Changes

Well 25S/24E-27R1, located seven miles southwest of Delano, has shown a sharp improvement in quality between 1960 and 1961. Water quality in well 26S/27E-9G1, nine miles east of McFarland, is very poor and has been steadily deteriorating since 1957. Nitrates in well 27S/20E-34G1, located eight miles southwest of Lost Hills, increased from 13 to 40 ppm between 1960 and 1961. Well 27S/26E-27R1, nine miles east of Wasco, has exhibited a steady deterioration in quality since 1957; while well 27S/27E-29J1, in the same general area, has been improving in quality during the same period of time. Chlorides in well 30S/29E-5D2, near Edison changed from 436 to 177 ppm between 1960 and 1961 with specific conductance and total dissolved solids also decreasing substantially.

PANOCH VALLEY, SAN BENITO COUNTY (5-23)

Panoche Valley lies in the eastern portion of San Benito County in the Mt. Diablo Range. It extends approximately eight miles from north to south and approximately 10 miles from east to west and covers a total area of about 30 square miles.

Monitoring Program

Panoche Valley was included in the monitoring program in 1959 for surveillance and to detect significant changes of ground water quality. During July 1961, samples were collected from four wells and from six wells during July 1962.

Ground Water Development

Panoche Valley is a synclinal basin geologically similar to the other small valleys in the Mt. Diablo Range. Ground water is obtained from alluvial deposits, apparently as unconfined ground water; however, deeper wells in the valley may be drawing from confined zones. Recharge of the ground water reservoir is from Panoche Creek and other minor streams. Water requirements in the valley are met by ground water due to the lack of surface water.

Evaluation of Ground Water Quality

Ground water is used beneficially for irrigation, domestic, and stock-watering purposes. There are no significant waste discharges. Ground water in Panoche Valley is sodium sulfate and sodium bicarbonate in type with very high sulfate concentrations being prevalent. Total dissolved solids,

boron, and specific conductance are all moderately high throughout the valley, while total hardness is in the very hard range.

Significant Water Quality Changes

No significant changes in the quality of ground water have been observed at this time.

LAHONTAN REGION

(No. 6)

(North)

LAHONTAN REGION (NO. 6) (NORTH)

The Lahontan Region includes inland basins along the easterly boundary of California. The area is on the lee side of the major mountain systems of the State and is characterized by an arid climate and desert type cultural development. The portion of the region covered by this report and shown on Plate 1 lies along the eastern flank of the Sierra Nevada and Cascade Ranges and extends northerly from the Mono divide to the Oregon border. There are ten major drainage basins with a gross area of 5,550 square miles within this area.

Water supply is dependent on winter rains and drainage from the eastern slopes of adjacent mountain ranges. Generally, there is limited development of ground water. Known problems are of a localized nature, however, mineralized spring waters throughout most of the area indicate potential hazards.

Nine ground water basins in this portion of the region have been included in the ground water monitoring program. The names of the monitored areas, the number of monitored wells in each basin, and the time of sampling are listed in the following tabulation.

<u>Monitored Area</u>	<u>Number of Wells Sampled</u>		<u>Sampling Time</u>
Surprise Valley (6-1)	1961	30	August
	1962	17	July
Madeline Plains (6-2)	1961	0	August
	1962	9	July
Honey Lake Valley (6-4)	1961	25	August
	1962	22	August
South Tahoe Valley (6-5.01)	1961	5	September
	1962	7	September

<u>Monitored Area</u>	<u>Number of Wells Sampled</u>		<u>Sampling Time</u>
North Tahoe Valley (6-5.02)	1961	4	October
	1962	12	September
Carson Valley (6-6)	1961	4	September
	1962	4	September
Truckee Valley (6-67)	1961	6	October
	1962	6	September
Topaz Valley (6-7)	1961	8	September
	1962	8	September
Bridgeport Valley (6-8)	1961	7	September
	1962	6	September
Lower Mojave River Valley (6-40) Barstow to Yermo*	--	--	--

*Ground water basin is located in Southern California and will be discussed in Part II of this bulletin.

SURPRISE VALLEY (6-1)

Surprise Valley is located in northeastern Modoc County and is bounded by the Warner Mountains on the west and the Nevada border on the east. The valley extends about 50 miles in a north-south direction, ranges up to 12 miles in width, and lies at an elevation of nearly 5,000 feet. Much of the center of the valley is occupied by three playa lakes.

Monitoring Program

A network of 28 monitoring wells was established in 1959 to provide information on ground water quality in the area. During August 1961, samples were collected from 19 wells and from 17 wells in July 1962.

Ground Water Development

Ground water is contained principally in alluvial fan, stream channel, and lake deposits. The most prolific aquifers are found in the alluvial fan deposits. Both confined and unconfined ground water exists in the area. The upper portions of alluvial fans, lava flows, deltaic, and beach deposits act as forebays for ground water recharge along the edge of the valley. There is no large scale development of ground water.

Evaluation of Ground Water Quality

Ground waters are used principally for domestic and stock watering purposes. Almost all irrigation requirements are met from surface water sources. Ground waters are used for very minor supplemental irrigation purposes. There are no major waste discharges in this valley. Septic tanks are used for most domestic wastes.

Chemical analyses of ground water in Surprise Valley generally vary from a soft to moderately hard sodium bicarbonate or calcium bicarbonate

type water. All sodium bicarbonate type waters indicate a percent sodium in excess of that recommended for class 1, irrigation waters. Aside from the high percent sodium, water from several wells also contain concentrations of fluoride or boron that render them unsuitable for either domestic or irrigation use. The calcium bicarbonate type waters, in almost all instances, are of excellent mineral quality suitable for most beneficial uses.

Significant Water Quality Changes

Comparison of the 1960 ground water analyses with those for 1961 and 1962 indicate no basin-wide quality changes at this time. Well 46N/16E-25R2, located approximately 6 miles southeast of Fort Bidwell, showed a boron decrease from 0.85 to 0.45 ppm.

MADLINE PLAINS (6-2)

Madeline Plains basin is one of the larger valley-fill areas in the northeastern counties. Located in northeastern Lassen County, Madeline Plains extends 13 miles in a north-south direction and 30 miles east to west, and encompasses an area of approximately 215 square miles.

Monitoring Program

To detect possible quality changes, a monitoring program was established in Madeline Plains in 1960. Samples were collected from 11 wells during August 1961 and from 9 wells in July 1962.

Ground Water Development

The main sources of ground water are lake deposits and interbedded lava flows. Minor amounts of water occur in thin stream channel and alluvial fan deposits. Both confined and unconfined water may occur in the area. The major forebays for ground water recharge are coarse lake deposits and lava flows along the edge of the valley. Because there is no perennial surface water supply to the Madeline Plains area, ground water is relied on as the major water supply required by residences of the area.

Evaluation of Ground Water Quality

There is very little agricultural development in the area. Ground water sources are principally used for domestic and stock watering purposes. There are no major waste discharges in the area. Minor waste discharges consist mainly of sewage effluent from several small communities and isolated ranches located in the area.

Ground waters in Madeline Plains are generally either a magnesium-calcium bicarbonate or sodium bicarbonate type water. They are soft to very hard and, in most cases, suitable for their present uses.

Significant Water Quality Changes

Comparison of the 1960 ground water analyses with those of 1961 and 1962 indicate no basin-wide quality change. Analysis of well 37N/13E-20Q1, located approximately 2 miles south of Madeline, showed a decrease in electrical conductance, sulfate, chloride, and total dissolved solids.

HONEY LAKE VALLEY (6-4)

Honey Lake Valley is located in northeastern California and northwestern Nevada. The California portion of Honey Lake Valley is located in southeastern Lassen County, has a length of 45 miles in a northwesterly direction, is about 15 miles wide, encompasses an area of approximately 400 square miles, and lies at an elevation of about 4,100 feet above sea level.

Monitoring Program

The monitoring program in Honey Lake Valley was established in 1959 to maintain a check on existing ground water quality to detect any quality changes. During August 1961, samples were collected from 25 wells in this area and from 22 wells during August 1962.

Ground Water Development

Ground water occurrence is contained principally in Lahontan Lake deposits which underlie most of the valley. Locally, alluvial fans and lava flows interbedded with the lake deposits contribute significant quantities of ground water. All of the above deposits contain both confined and unconfined water. Extensive underlying pre-Lahontan Lake deposits are a source of highly mineralized water to deep wells. Ground water recharge occurs by infiltration of surface water into: (1) extensive lava flows north of the valley; (2) coarse lake deposits; (3) apexes of alluvial fans; and (4) minor stream channel deposits along the edge of the valley floor. Numerous wells have been drilled throughout this valley, but to date there has been only minor utilization of ground waters in Honey Lake Valley.

Evaluation of Ground Water Quality

Ground water is used primarily as a domestic source, and to a lesser extent for irrigation and industrial purposes. Effluent from the City of Susanville sewage treatment plant, discharged into the Susan River, is the only major waste discharge in the valley. The other smaller communities have individual septic tanks or cesspools. Present waste discharges are not a threat to the quality of ground water in this area.

Ground waters in Honey Lake Valley are generally classified as fair to good, but are variable in mineral composition. Dispersed throughout the valley are ground water sources yielding high concentrations of one or a combination of the following constituents: boron, fluoride, chloride, nitrate, and sulfate. However, only in a few instances do these mineral concentrations exceed mandatory or recommended criteria. Chemical analyses indicate at least 13 different chemical classifications of ground water. Ground waters are predominantly sodium bicarbonate type in the northern part of the valley, but are calcium bicarbonate in character in the western portion south of the Susan River. Along the southwestern edge of the valley, ground waters generally have bicarbonate as the predominant anion, with calcium and sodium combinations constituting the most abundant cations. Several sampled sources, scattered throughout the valley, yield a sodium bicarbonate-sulfate type water. The only valley-wide problem is high percent sodium.

Scattered throughout the valley are ground water sources containing high concentrations of boron, and in some instances, these waters are further degraded by high concentrations of fluoride. Two wells located on the Sierra Ordnance Depot, and one hot spring, located several miles

north of the Sierra Ordnance Depot, contain high electrical conductance and high concentrations of sulfate. Two wells, located in the vicinity of Lake Leavitt, discharge waters containing high concentrations of nitrate.

Significant Water Quality Changes

Comparison of chemical analyses of samples collected in 1961 and 1962 with those collected in 1960 indicate quality changes occurred in four wells scattered throughout the valley. Well 27N/16E-11E1, located on the Sierra Ordnance Depot, had reductions in electrical conductance, chloride, and total dissolved solids, concentrations of 1,946 to 880 micromhos, 433 to 44 ppm, and 1,067 to 595 ppm, respectively. Well 27N/16E-36Q2, also located on the Sierra Ordnance Depot had an increase in sulfate concentration from 271 ppm to 343 ppm. Well 29N/13E-34N1, located approximately 2 miles north of Janesville had an increase in nitrate concentration from 54 ppm to 88 ppm. Well 29N/14E-18R1, located approximately 1 mile west of Standish had an increase in fluoride and boron concentrations of 0.85 ppm to 1.6 ppm, and 0.68 ppm to 1.1 ppm, respectively.

SOUTH TAHOE VALLEY (6-5.01)

South Tahoe Valley borders the south shore of Lake Tahoe and extends southward along the Upper Truckee River for an estimated ten miles. The valley encompasses approximately 40 square miles.

Monitoring Program

The monitoring program was established in 1958 to provide information on ground water quality in the area and to detect significant changes. During September 1961, samples were collected from five wells and from seven wells during September 1962.

Ground Water Development

Ground water in the valley is drawn from interbedded layers of clay and sand which occasionally contain lenses of gravel. These formations are lake and stream deposits, however, because of their continuity over a wide area, it would appear that the majority of the valley fill is lacustrine in origin. Most of the deeper wells in the area have penetrated three separate aquifers. Ground water in South Tahoe Valley has been moderately developed.

Evaluation of Ground Water Quality

The majority of the wells are for domestic use in individual dwellings and while the yields are small, quantities are adequate for the seasonal demands. Municipal water supplies, primarily originating from surface sources, are augmented by ground water during periods of low flow. Only one major disposal system exists in South Tahoe Valley. This installation, operated by the South Tahoe Public Utility District, disposes of its treated effluent by sprinkling on a forested percolation area south of the lake.

Ground waters in Tahoe Valley are predominantly calcium bicarbonate in type, low in total dissolved solids, and are of excellent mineral quality.

Significant Water Quality Changes

No significant changes have been observed at this time.

NORTH TAHOE VALLEY (6-5.02)

North Tahoe Valley is located on the north and west sides of Lake Tahoe in eastern Placer and El Dorado Counties. Included in this alluviated system are a number of small valleys adjacent to the Truckee River. Squaw Valley is the largest of the valleys.

Monitoring Program

The monitoring program was established in 1961 to provide information on the ground water quality in the area and to detect significant changes. During October 1961, 14 wells; and in September 1962, 12 wells were sampled.

Ground Water Development

The ground water is contained in sand and gravel lenses which were formed and modified by a number of geological processes. Old lake deposits and glacial morain material contribute most of the water although the presence of thermal springs would indicate volcanic or faulting activity both of which are known to have occurred in the area.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic purposes. Major discharges in the area are treated domestic wastes from the North Tahoe Public Utility District and the Tahoe City Public Utility District. Disposal is by percolation and evaporation.

Ground waters of the North Tahoe area are soft to slightly hard, predominantly calcium bicarbonate in type, and of excellent mineral quality, however, exceptions were noted. Thermal springs near Brockway produce waters which are sodium chloride in type and contain high concentrations of arsenic, boron, and fluorides.

Significant Water Quality Changes

No significant water quality changes have been observed at this time.

CARSON VALLEY (6-6)

Carson Valley is located in northern Alpine County and is bordered on the north by the California-Nevada state line. The monitored portion has a north-south length of approximately 9 miles, and includes an area of about 25 square miles.

Monitoring Program

A monitoring program was established in Carson Valley in 1958 to observe ground water quality and to detect significant changes. During September 1961, samples were collected from four wells, and in September 1962 from four wells.

Ground Water Development

Ground water in Carson Valley occurs mainly in flood plain and alluvial fan material. Though most of the valley floor is of an apparent coarse-grained nature, there is only limited development of ground water in the valley.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic and stock-watering purposes. There are no major waste discharges in Carson Valley. Individual septic tanks apparently pose no threat to ground water quality in this sparsely populated area.

Ground waters of Carson Valley are a soft to slightly hard calcium bicarbonate type with excellent mineral qualities and are suitable for all uses. There are no apparent ground water quality problems in the monitored area.

Significant Water Quality Changes

No significant water quality changes have been observed at this time.

TRUCKEE VALLEY (6-67)

Truckee is an alluviated area located in southeastern Nevada and northeastern Placer Counties and consists of several irregularly shaped ground water basins.

Monitoring Program

The monitoring program was established in 1961 to provide information on ground water quality in the area and to detect significant changes. During October 1961 and September 1962 samples were collected from six wells.

Ground Water Development

Ground water in Truckee Valley is derived from many clay and gravel lenses which were deposited by water. The deeper water bearing lenses appear to be lacustrine in origin while much of the surface material is glacial outwash and moraines which are the result of past glacial activity. Because of the relatively low population, water demands have not required intensive development. Established springs and water from recently drilled wells furnish water to the Truckee Public Utility District which is the chief purveyor of domestic supplies in the area. Requirements in adjacent areas are usually satisfied by small individual wells.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic purposes. Domestic wastes from the town of Truckee constitute the only major discharge in the area. These wastes are treated and discharged to percolation ponds.

Samples of ground water indicate a predominantly calcium bicarbonate type, relatively soft, and low in total dissolved solids. These waters are of excellent mineral quality and suitable for all existing beneficial uses.

Significant Water Quality Changes

No significant water quality changes have been observed at this time.

TOPAZ VALLEY (6-7)

Topaz Valley is bordered on the north by the State of Nevada. The California portion of Topaz Valley is in Mono County, and extends about 11 miles south from the state line and includes an area of about 36 square miles.

Monitoring Program

A monitoring program was established in Topaz Valley in 1958 to provide information on ground water quality in the area and to detect significant changes. Eight wells were sampled during September 1961 and September 1962.

Ground Water Development

Topaz Valley is bounded on the east and west by faults along which movement of great magnitude have occurred. The valley has been depressed along these faults and is a typical basin-range graben, or down-dropped block. The valley fill consists of alluvial fan, flood plain, and river channel deposits. Ground water occurs in two separate zones, the unconfined or free ground water zone, and the deeper confined or artesian zone. Ground water comprises only a small portion of the total amount of water used.

Evaluation of Ground Water Quality

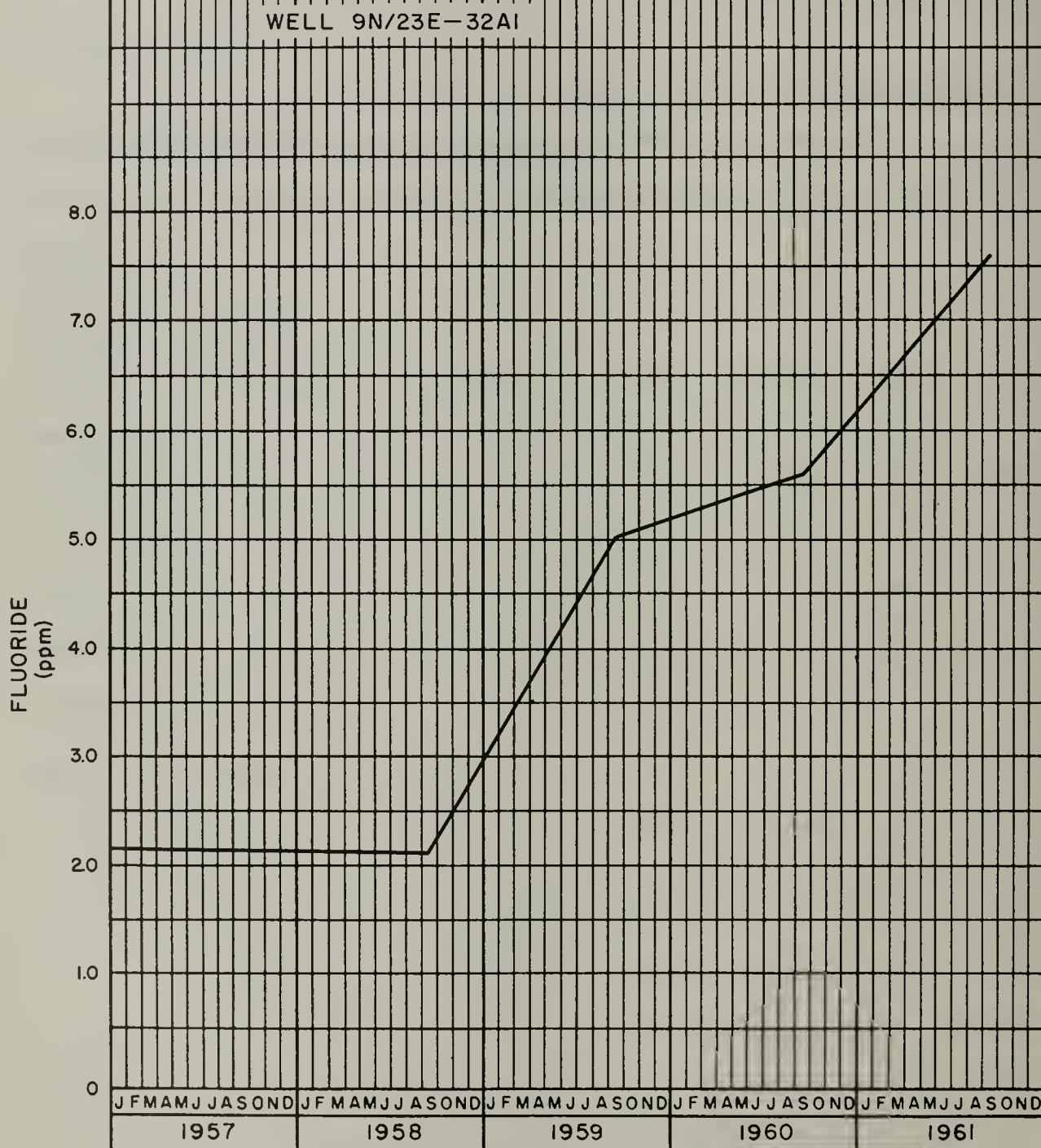
Ground water is used primarily for domestic and stock watering purposes. There are no large waste discharges in this area. Individual septic tanks are commonly used throughout this area.

Ground waters in Topaz Valley are a soft to moderately hard bicarbonate type with calcium and sodium the predominant cations. Three wells dispersed through the area yield high concentrations of fluoride and high percentages of sodium. The fluoride content is in excess of the mandatory limiting

concentrations for drinking water standards, although it is presently being used for domestic and stock-watering purposes. This poor quality water possibly originates from a series of faults running through the valley. The remaining monitored wells are of excellent mineral quality and suitable for most beneficial uses.

Significant Water Quality Changes

On page 176 a graph of fluoride in well 9N/23E-32A1 shows the increase in fluoride concentrations for the period of record.



FLUCTUATIONS OF CONSTITUENTS IN SELECTED WELLS
TOPAZ VALLEY

BRIDGEPORT VALLEY (6-8)

Bridgeport Valley is located in the northern portion of Mono County. This irregularly shaped valley extends from the northern end of Bridgeport Reservoir southward for approximately 20 miles, and encompasses an area of about 45 square miles.

Monitoring Program

High concentrations of boron known to occur in some ground water in the valley prompted the establishment of a monitoring program in 1959. Samples were collected from seven wells during September 1961 and from six wells in September 1962.

Ground Water Development

Bridgeport Valley is a structural basin sharply defined by normal faults on both the eastern and western margins. The southern end of the valley floor is poorly defined because of the encroachment of glacial moraines and outwash. The glacial deposits serve as a source of recharge for the valley fill. The valley fill at depth is probably lacustrine in origin and is overlain by a series of flood plain and river channel deposits. Alluvial fill which overlies the lake sediments of Bridgeport Valley is mostly of a fine-grained nature, being composed chiefly of flood plain deposits. A high water table is present over much of the valley floor and is maintained in part by percolation from Bridgeport Reservoir in the northern end of the valley. There is limited development of ground water in the valley.

Evaluation of Ground Water Quality

Ground water is used primarily for domestic purposes. The town of Bridgeport is the only municipal user of ground water in the valley. There

are no large waste discharges in Bridgeport Valley. Septic tanks, used by individual householders, could pose a quality problem to ground water due to the high water table in the valley.

Ground waters in Bridgeport Valley are generally calcium or sodium bicarbonate in type. Although soft to very hard, the waters are generally of good to excellent quality and suitable for most uses. Water from well 4N/25E-4F1, located approximately 1.3 miles south of Bridgeport, contains high concentrations of boron, sulfate, fluoride, and sodium, which is probably caused by nearby mineralized hot springs.

Significant Water Quality Changes

No significant water quality changes have been observed at this time.

APPENDIX A
PROCEDURES AND CRITERIA

APPENDIX A
PROCEDURES AND CRITERIA

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PROCEDURES AND CRITERIA

Ground water quality data is gathered to provide monitoring so that the quality of ground water can be protected and to provide information that will be used by ground water planning programs. Adequate procedures to fulfill these aims must result in representative, reliable, and sufficient data.

Evaluation of Data

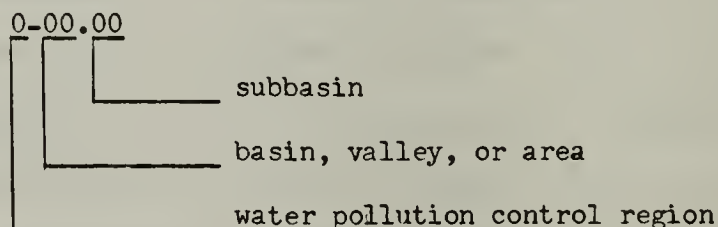
Data are useful only to the extent that they are evaluated and applied. The department maintains a chronological record of observations to note changes in individual wells and is studying areal relationships. The selection of individual wells is governed, to a large extent, by the availability of well logs. Sufficient information such as depth, aquifers encountered, and depths of perforations for each well is necessary so that the occurrence of different sources of ground water may be identified. Wells are selected for the sampling network to define the areal extent of quality characteristics, to define the quality of water within separate aquifers, and to monitor areas where significant changes occur. Also, the selection is based on the need for information in the area, on prior knowledge of the occurrence of constituents throughout an area, or to anticipate ground water quality data requirements of planning projects.

There has been discussion as to what a sample represents, a sample of a ground water body in place in its aquifer or a sample limited to the water available for use at the surface of the ground. At present, the sampling program achieves the latter alternative. Evaluation of the data is aimed at the general case since this would provide for the limited

case, also. The present sampling program is sufficient to represent general areal conditions. Current evaluations and program adjustments will improve knowledge of existing conditions. Data for individual wells are representative over a limited time period.

Location Designation

The region and basin numbers in this report are based on a decimal system in the form 0-00.00. The number to the left of the dash refers to the water pollution control region. To the right of the dash, the first digit or digits refer to the basin, valley, or area. Digits to the right of the decimal, if any, refer to the subbasin number as shown below.



These numbers are used to identify the monitored areas in the text, in the data tables, and on Plate I. A "monitored area" is defined as that portion of a ground water basin which lies generally within the limits of an established network of monitored wells. It does not necessarily include the entire ground water basin.

Wells selected for inclusion in the ground water quality monitoring network are assigned numbers by township, range, and section, based upon their location. The numbering system is the same as that utilized by the United States Geological Survey. Under this system each section is divided into 40-acre plots, which are lettered as follows:

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Wells are numbered within each of these 40-acre plots according to the order in which they are selected for monitoring. For example, a well having a number 3N/6E-24A2 is located in Township 3 North, Range 6 East, and in Section 24. It is further identified as the second well selected in the 40-acre plot lettered A.

Types of Mineral Analyses

The following tabulation indicates the tests made, and the properties and constituents usually analyzed for, in the various types of mineral analyses performed as a part of the Ground Water Quality Monitoring Program.

Constituents and properties	A n a l y s i s		
	: Standard	: Partial	: Heavy
	: mineral	: mineral	: metals
Specific conductance	x	x	
pH	x	x	
Total dissolved solids	x		
Percent sodium	x		
Hardness	x	x	
Temperature	x	x	
Calcium	x		
Magnesium	x		
Sodium	x	x	
Potassium	x		
Carbonate	x		
Bicarbonate	x		
Sulphate	x		
Chloride	x	x	
Nitrate	x		
Fluoride	x		
Boron	x	x	
Silica	x		
Aluminum			x
Iron			x
Manganese			x
Chromium			x
Copper			x
Lead			x
Zinc			x
Arsenic			x

Laboratory Methods and Procedures

Analytical methods used in determination of the various constituents reported conform, in general, to those presented in "Standard Methods for the

Examination of Water and Waste Water," a joint publication of the American Public Health Association, the American Water Works Association, and the Water Pollution Control Federation, 11th edition, 1960. For certain specific analyses, methods described in "Methods for Collection and Analysis of Water Samples," United States Geological Survey Water Supply Paper 1454, 1960, have been used.

Mineral analyses of the water samples were performed at the laboratories of the United States Geological Survey, Quality of Water Branch, and the Department of Water Resources, both located in Sacramento, or by the Terminal Testing Laboratories located in Los Angeles.

Radiological

Radioassays of samples were performed at the Radiological Laboratory of the California Disaster Office in Sacramento. The methods and procedures for sample preparation and determination of radioactivity in ground waters are as follows:

1. Sample preparation

- a. Samples are collected in one-half gallon jugs by the Department of Water Resources and delivered to the Radiological Laboratory of the California Disaster Office for radioassay.
- b. Each sample is mixed by agitating the jug, and 250 ml are removed.
- c. The sample is placed in a 250 ml volumetric flask and one drop of aerosol solution added. The flask is then inverted and the mouth placed in a 2 x $\frac{1}{4}$ inch aluminum culture dish that has been treated with Desicote. The flask is supported

by a ring stand and the water level adjusted to the lip of the dish in a "chicken-feeder type" arrangement. The dish rests on a hotplate, regulated so that the specimen is taken to dryness at a temperature well below the boiling point to prevent spattering.

d. The specimen is now ready to be measured for radioactivity.

2. Counting techniques

a. A gross beta-gamma determination is made for each specimen.

b. Beta-gamma activity is determined with an internal gas flow counter operating in the proportional region, using argon-methane mixture as a flow gas. Background determinations are made before the first specimen count each day, and subsequently after each four specimen counts throughout the day. Determinations of counter efficiency are made with a reference standard (Thallium 204). Each determination of specimen and background count rate is made for a total of 1,024 counts. Average time required for each specimen is from 30 to 40 minutes.

3. Calculations

a. Results are expressed as micromicrocuries per liter (uuc/l). One micromicrocurie is equivalent to 2.22 disintegrations per minute.

b. Sample counts are corrected for background and geometric efficiency.

c. Standard statistical procedures are utilized to compute the 0.9 error. The final result is expressed (symbolically)

as $x \pm y$ uuc/l. This means that in a series of determinations on the same sample, the value of x should fall between $x - y$ and $x + y$, 90 percent of the time.

Water Quality Criteria

Criteria presented in the following sections can be utilized in evaluating the quality of water relative to existing or anticipated beneficial uses. It should be noted that these criteria are merely guides to the appraisal of water quality. Except for those constituents which are considered toxic to human beings, these criteria should be considered as suggested limiting values. A water which exceeds one or more of these limiting values need not be eliminated from consideration as a source of supply, but other sources of better quality water should be investigated.

Domestic and Municipal Water Supply

In general, water that is used for drinking or culinary purposes should be clear, colorless, odorless, pleasant to the taste, and free from toxic compounds, should not contain excessive quantities of dissolved minerals, and must be free from pathogenic organisms.

Chapter 7 of the California Health and Safety Code contains provisions which relate to water supplies used for domestic purposes throughout the State. One of these provisions covers standards for quality of domestic water supplies. In essence, this section (No. 4010.5) refers to the drinking water standards promulgated by the United States Public Health Service for water used on interstate carriers as of March 1946.

Recently the United States Public Health Service revised its drinking water standards. Portions of these new standards are presented herein. The complete standards, which cover definition of terms, bacteriological

quality, physical characteristics, chemical characteristics, radioactivity, and recommended analytical methods, are contained in the March 6, 1962 issue of the Federal Register under Rules and Regulations.

Mineral Concentrations

The following tabulation gives the limiting concentrations of chemical constituents for drinking water, as prescribed by the United States Public Health Service.

UNITED STATES PUBLIC HEALTH SERVICE
DRINKING WATER STANDARDS
1962

<u>Constituents</u>	<u>Mandatory limit in ppm</u>
Arsenic (As)	0.05
Barium (Ba)	1.0
Cadmium (Cd)	0.01
Hexavalent chromium (Cr+ ⁶)	0.05
Cyanide (CN)	0.2
Lead (Pb)	0.05
Selenium (Se)	0.01
Silver (Ag)	0.05
	<u>Nonmandatory, but recommended limit in ppm</u>
Aklyl benzene sulphonate (detergent)	0.5
Arsenic (As)	0.01
Carbon chloroform extract (exotic organic chemicals)	0.2
Chloride	250
Copper (Cu)	1.0
Cyanide (CN)	0.01
Iron (Fe)	0.3
Fluoride (F)	See following page
Manganese (Mn)	0.05
Nitrate (NO ₃)	45
Phenols	0.001
Sulphate (SO ₄)	250
Total dissolved solids	500
Zinc (Zn)	5

Interim standards for the upper limits of certain mineral constituents were adopted by the California State Board of Public Health in December

1959. Based on these standards, temporary permits may be issued for drinking water failing to meet the United States Public Health Service Drinking Water Standards provided the mineral constituents in the following tabulation are not exceeded.

UPPER LIMITS OF TOTAL SOLIDS AND SELECTED MINERALS IN
DRINKING WATER AS DELIVERED TO THE CONSUMER
(parts per million)

	<u>Permit</u>	<u>Temporary Permit</u>
Total solids	500 (1000)*	1500
Sulfates (SO ₄)	250 (500)*	600
Chlorides (Cl)	250 (500)*	600
Magnesium (Mg)	125 (125)*	150

Fluoride Concentration. The California State Board of Public Health has defined the maximum safe amounts of fluoride ion in drinking water in relation to mean annual temperature.

<u>Mean annual temperature</u>	<u>Mean monthly fluoride ion concentration (ppm)</u>
50° F	1.5
60° F	1.0
70° F - above	0.7

Hardness. Even though hardness of water is not included in the drinking water standards, it is of importance in domestic and industrial uses. Excessive hardness in water used for domestic purposes causes increased consumption of soap and formation of scale in pipes and fixtures. The following tabulation for degrees of hardness is suggested.

<u>Range of hardness expressed as CaCO₃, in ppm</u>	<u>Relative classification</u>
0 - 100	Soft
101 - 200	Moderately hard
Greater than 200	Very hard

* Numbers in parentheses are maximum permissible to be used only where no other more suitable waters are available in sufficient quantity for use in the system.

Radioactivity. As part of its new drinking water standards, the United States Public Health Service recently announced limits on concentrations of radioactivity in drinking waters. These limits are as follows:

<u>Radionuclide</u>	<u>Recommended maximum limits micromicrocuries per liter</u>
Radium 226	3
Strontium 90	10
Gross beta activity	1,000*

According to the International Commission on Radiological Protection^{1/}, tentatively concurred in by the National Committee on Radiation Protection^{2/}, if the Radium-226 and Radium-228 activity in water is substantially less than 10 uuc/l, the maximum permissible concentration of otherwise unidentified radionuclides in water for individuals in the population at large may be considered to be 100 uuc/l.

Industrial Water Supply

Water quality criteria for industrial waters are as varied and diversified as industry itself. Food processing, beverage production, pulp, and paper manufacturing, and textile industries have exacting requirements. However, many cooling or metallurgical operations permit the use of poor quality waters. In general, where a water supply meets drinking water standards, it is satisfactory for industrial use, either directly or following a limited amount of polishing treatment by the industry.

* In the known absence of strontium-90 and alpha emitters.

^{1/} "Report on Decisions of the 1959 Meeting of the International Committee on Radiological Protection (ICRP)." Radiology, Vol. 74, No. 1, January 1960, pp. 116-119.

^{2/} "Somatic Radiation Dose for the General Population, Ad Hoc Committee of the National Committee on Radiation Protection and Measurements." Science, Vol. 131, No. 3399, February 19, 1960, pp. 482-486.

Irrigation Water

Criteria for mineral quality of irrigation water have been developed by the Regional Salinity Laboratories of the United States Department of Agriculture in cooperation with the University of California. Because of diverse climatological conditions and the variation in crops and soils in California, only general limits of quality for irrigation waters can be suggested.

QUALITATIVE CLASSIFICATION OF IRRIGATION WATERS

	: Class 1	: Class 2	: Class 3
Chemical properties	: Excellent	: Good to	: Injurious to
	: to good	: injurious	: unsatisfactory
Total dissolved solids, in ppm	Less than 700	700 - 2000	More than 2000
Conductance, in micromhos at 25° C	Less than 1000	1000 - 3000	More than 3000
Chlorides in ppm	Less than 175	175 - 350	More than 350
Sodium in percent of base constituents	Less than 60	60 - 75	More than 75
Boron in ppm	Less than 0.5	0.5 - 2.0	More than 2.0

These criteria have limitations in actual practice. In many instances a water may be wholly unsuitable for irrigation under certain conditions of use, and yet be completely satisfactory under other circumstances. Consideration also should be given to soil permeability, drainage, temperature, humidity, rainfall, and other conditions that can alter the response of a crop to a particular quality of water.

Chemical Classification of Waters

Waters are classified, with respect to mineral composition, in terms of the predominant ions. Specifically, the name of an ion is used

where it constitutes at least half of its ionic group, expressed in equivalents per million (epm). Where no one ion fulfills the requirement, a hyphenated combination of the two most abundant constituents is used. Thus a calcium bicarbonate water denotes that calcium constitutes at least half of the cations and bicarbonate represents at least half of the anions. Where calcium, though predominant, is less than half of the total cations with sodium next in abundance, and where bicarbonates are more than half of the total anions, the name is modified to calcium-sodium bicarbonate.

APPENDIX B
GROUND WATER QUALITY DATA
1961 and 1962

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃ Total ppm	N.C. ppm	Analysed by c		
						equivalents per million																
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Fluo- ride (F)						Boron (B)	Silica (SiO ₂)
NORTH COASTAL REGION (NO. 1) - EMLER RIVER PLAIN (1-1)																						
A. Short, domestic	16N/14-20L	8-29-61	232	7.1	1.6	12	16	0.4	0	1.27	0.3	11	1.2	0.2	0.06	40	Fe (total) 7.2, Zn 0.02	159	28	89	0	IMR
L. Cadra, domestic	-77L	8-30-61	308	8.1	3.1	12	16	1.0	0	1.50	0.8	26	1.2	0.1	0.04	19	Al 0.01, Fe (total) 2.1, Zn 0.06	181	21	129	6	IMR
L. D. Early, domestic	-150L	8-29-61	152	6.3	5.4	2.4	9.2	0.4	0	0.44	1.6	14	18	0.0	0.02	22	Al 0.01, Cu 0.02, Fe (total) 0.01, Zn 0.05	102	28	52	16	IMR
Pine Grove School, domestic	-16M	8-29-61	189	7.5	6.9	13	10	0.4	0	0.73	1.6	22	2.3	0.1	0.03	28	Al 0.01, Fe (total) 0.06, Zn 0.46	120	24	70	10	IMR
S. R. Mattson, domestic	-17K1	8- -61	203	7.7	6.7	15	11	0.4	0	0.73	3.3	25	5.5	0.0	0.03	29	Al 0.01, Fe (total) 0.06, Zn 0.02	132	23	78	18	IMR
A. Pullen, domestic	-20A2	8-29-61	197	6.4	4.3	8.4	20	0.6	0	0.61	2.9	20	27	0.0	0.07	20	Cu 0.02, Fe (total) 0.18	128	49	45	15	IMR
W. Story, domestic	-20H1	8-29-61	167	7.2	5.0	9.1	13	0.6	0	0.74	6.7	17	15	0.1	0.06	17	Fe (total) 0.59, Zn 0.08	106	35	50	13	IMR
H. C. Kirkland, domestic	-2601	8-31-61	304	7.7	8.0	13	30	0.0	0	0.54	1.0	42	35	0.1	0.00	19		175	47	72	28	IMR
E. Mellow, irrigation	17N/14-20L	8-30-61	107	5.9	4.8	6.3	6.8	0.2	0	0.77	1.2	7.8	4.2	0.1	0.03	18	Al 0.01, Fe (total) 0.02, Zn 0.12	72	28	38	0	IMR
R. H. Emerson, irrigation	-9A1	8-29-61	250	7.7	6.5	27	4.8	0.4	0	1.49	0.8	8.1	2.2	0.1	0.04	34	Al 0.01, Fe (total) 0.02, Zn 0.06	157	8	127	5	IMR
Redwood School, domestic	-140L	8- -61	364	8.1	2.2	16	35	2.5	0	1.95	14	15	1.3	0.1	0.18	22	Al 0.02, Pb 0.01, Fe (total) 0.03, Zn 0.22	224	38	119	0	IMR
R. W. Struebing, domestic	13N/14-50L	8-30-61	174	5.9	8.8	5.1	16	0.7	0	0.20	4.0	32	21	0.0	0.05	10	Cu 0.09, Pb 0.03, Fe (total) 0.18, Zn 0.11	104	44	43	33	IMR
M. J. Sierks, domestic	-17R1	8- -61	213	7.0	1.6	7.8	18	0.5	0	1.09	1.0	13	0.4	0.1	0.09	35	Cu 0.05, Pb 0.03, Fe (total) 3.5, Zn 0.11	146	35	72	0	IMR
M. J. Sierks, domestic	-17R2	8- -61	211	7.4	2.4	2.9	18	0.5	0	1.09	1.3	13	1.0	0.1	0.09	34	Cu 0.05, Pb 0.03, Fe (total) 3.2	149	35	72	0	IMR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), and State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{100}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent total solids	Hardness as CaCO ₃		Analyzed by c			
						equivalents per million												Total ppm	N.C. ppm				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)	Silica (SiO ₂)	Other constituents
NORTH COASTAL REGION																							
H. & M. A. Samuelson, irrigation	13N/1W-26M	8-30-61		101	6.1	5.5	3.8	6.3	0.3	0	10	1.6	9.0	26	0.0	0.06	12	Cu 0.05, Pb 0.03, Fe (total) 0.03, Zn 0.07	70	31	29	21	IMR
						0.27	0.31	0.27	0.01	0.00	0.15	0.03	0.25	0.42	0.00								
Jepson, domestic & stock	-34M2	8-30-61		356	7.6	15	37	3.8	0.8	0	222	4.0	5.8	5.3	0.0	0.07	40	Pb 0.02, Fe (total) 0.07	221	4	191	9	IMR
						0.75	3.07	0.16	0.02	0.00	3.64	0.08	0.16	0.80	0.00								
D. Mills, irrigation	45N/2W-1F1	10-19-61	55	232	7.6	21	12	8.7	2.6	0	114	1.3	0.3	10	0.2	0.07	50		174	16	100	7	IMR
						1.05	0.95	0.38	0.07	0.00	1.87	0.28	0.01	0.15	0.01								
Frum Bros., irrigation	46N/1W-6F1	7-21-61	56	704	8.5	28	18	133	15	12	487	8.6	13	4.2	0.3	0.36	54		525	64	145	0	IMR
						1.40	1.50	5.78	0.30	0.40	7.98	0.18	0.37	0.87	0.00								
Spring School, domestic	47N/2W-20M1	3-29-61		276	8.0	16	15	18	8.6	0	176	0.0	3.3	0.06	0.1	0.06	26		175	26	101	0	IMR
						0.80	1.22	0.78	0.28	0.00	2.98	0.00	0.09	0.03	0.00								
J. Liskay, irrigation	44N/1E-30F1	--		447	8.1	12	10	79	13	0	278	18	7.4	0.7	0.3	0.35	42		320	66	71	0	IMR
						0.60	0.35	3.44	0.33	0.00	4.50	0.77	0.21	0.01	0.00								
J. Liskay	43N/1W-28F1	--		203	7.6	3.4	0.8	44	1.6	0	115	0.8	5.2	2.7	0.2	0.30	20		135	87	12	0	IMR
						0.17	0.07	1.91	0.04	0.00	1.98	0.02	0.15	0.04	0.01								
Rig Springs Irrigation Dist., irrigation	43N/5W-22L	10-15-61	56	236	7.6	16	11	17	2.1	0	124	3.4	2.5	9.7	0.2	0.20	22		173	30	84	0	IMR
						0.80	0.88	0.74	0.05	0.00	2.03	0.07	0.27	0.01	0.00								
Dougherty & Sons, irrigation	43N/6W-21R1	10-12-61	60	393	7.7	44	21	8.0	1.3	0	240	12	2.2	3.7	0.1	0.08	31		141	8	196	0	IMR
						2.20	1.72	0.35	0.03	0.00	3.93	0.25	0.07	0.06	0.00								
S. D. Nelson, domestic irrigation	44N/5W-32F1	7-23-61		1,330	8.1	42	68	145	4.3	0	504	10	193	1.5	0.3	2.1	53		767	45	384	0	IMR
						2.10	5.57	6.31	0.11	0.00	8.26	0.21	5.44	0.02	0.00								
H. Silva, irrigation	-34M1	10-16-61		676	7.5	44	34	21	6.4	0	388	7.7	24	10	0.4	0.37	66		440	29	262	0	IMR
						2.14	2.79	2.22	0.15	0.00	6.36	0.15	0.78	0.02	0.00								
C. Stone, domestic	44N/6W-22K1	3-27-61		329	7.9	42	14	13	1.0	0	195	6.4	10	10	0.4	0.11	28		221	15	161	1	IMR
						2.10	1.18	0.56	0.02	0.00	3.20	0.13	0.28	0.17	0.02								
Sielenou County, industrial	45N/5W-6E1	3-29-61		221	8.5	7.2	5.1	220	1.7	17	535	0.0	28	0.3	2.1	9.0	21		574	92	39	0	IMR
						0.36	0.42	9.57	0.04	0.57	8.77	0.00	0.79	0.00	0.11								
C. W. Black, irrigation	42N/5W-20L	10-18-61	55	455	8.0	54	27	6.4	0.6	0	291	6.1	2.5	10	0.1	0.04	27		277	5	246	7	IMR
						2.69	2.23	0.28	0.02	0.00	4.77	0.13	0.07	0.15	0.00								
W. H. Landon, domestic	-27K	3-28-61		72	7.2	9.2	1.7	2.4	0.3	0	32	0.0	2.4	6.6	0.0	0.05	13		52	14	30	4	IMR
						0.46	0.14	0.10	0.01	0.00	0.52	0.00	0.07	0.11	0.00								
Dunsmuir Water Dist., municipal	43N/5W-20L	10-18-61	58	518	8.0	54	36	4.2	1.1	0	315	16	2.2	16	0.2	0.11	26		311	3	282	24	IMR
						2.69	2.94	0.18	0.03	0.00	5.16	0.33	0.06	0.26	0.01								

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 200 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by		
						equivalents per million												Total ppm	N.C. ppm			
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Fluo- ride (F)						Boron (B)	Silico (SiO ₂)
NORTH COASTAL REGION (NO. 1) -- SCOTT RIVER VALLEY (1-5) (CONT.)																						
F. Lockenmeyer, domestic	MTVM 43N/54-3F1	3-28-61		225	7.8	31 1.55	7.9 0.65	4.6 0.20	0.4 0.01	123 0.00	2.02	1.6 0.03	2.4 0.07	15 0.24	0.1 0.00	0.10	18	141	8	110	9	IMR
F. Lockenmeyer, domestic	-2F1	10-10-61	60	371	7.0	54 2.69	5.7 0.47	8.8 0.38	0.4 0.01	200 0.00	3.28	3.4 0.07	0.3 0.01	5.4 0.09	0.1 0.00	0.02	24	200	11	158	0	IMR
L. L. Lukes, irrigation	-24F1	56		388	7.9	31 1.55	31 2.53	5.0 0.22	0.6 0.02	241 0.00	3.95	5.9 0.12	2.2 0.06	0.1 0.13	0.1 0.00	0.10	36	238	5	204	6	IMR
L. L. Lukes, irrigation	-24F2	56		465	7.9	48 2.40	32 2.65	4.2 0.16	0.6 0.02	258 0.00	4.88	6.1 0.13	2.0 0.06	2.3 0.15	0.1 0.00	0.12	34	202	3	253	0	IMR
B. Walker, domestic	-32G1	10-18-61	56	79	6.7	11 0.55	1.8 0.15	1.7 0.07	0.7 0.02	42 0.00	0.69	1.8 0.04	0.1 0.00	1.1 0.02	0.0 0.00	0.02	14	53	9	35	1	IMR
Taylor, irrigation	-33G1	3-28-61	51	55	6.8	7.5 0.37	1.1 0.09	1.8 0.08	0.5 0.01	28 0.00	0.46	0.6 0.01	0.5 0.02	0.9 0.01	0.1 0.00	0.05	12	39	14	23	0	IMR
L. Miller, domestic	43N/10W-14H1	3-28-61		66	7.4	6.7 0.33	3.0 0.25	1.4 0.06	0.4 0.01	35 0.00	0.57	0.0 0.00	1.9 0.05	0.4 0.01	0.1 0.00	0.02	15	46	9	29	0	IMR
L. Miller, domestic	-14H1	10-18-61	60	81	7.0	9.0 0.45	3.5 0.29	1.7 0.07	0.5 0.01	46 0.00	0.75	1.0 0.04	0.2 0.00	0.0 0.00	0.0 0.00	0.00	14	54	3	37	0	IMR
H. A. Reynolds, domestic & irrigation	31N/11W-8M1	6- -61		128	7.0	14 0.70	4.6 0.38	3.3 0.16	1.0 0.02	74 0.00	1.21	0.3 0.02	1.1 0.03	0.2 0.00	0.0 0.00	0.08	23	84	13	54	0	IMR
R. Hood, domestic & garden	31N/12W-11Q1	6- -61		270	7.3	35 1.75	8.9 0.73	7.7 0.33	0.2 0.00	155 0.00	2.94	7.6 0.16	4.2 0.12	0.1 0.01	0.0 0.00	0.02	25	165	12	124	0	IMR
J. Langberg, domestic	-12Q1	6- -61		195	6.7	20 1.00	7.8 0.64	7.0 0.30	0.9 0.02	105 0.00	1.72	5.1 0.11	3.1 0.09	2.6 0.04	0.0 0.00	0.03	24	122	15	42	0	IMR
Jesse, domestic	-15Q1	6- -61		238	7.5	24 1.20	11 0.90	2.3 0.40	0.2 0.00	139 0.00	2.28	2.0 0.04	5.1 0.14	2.1 0.03	0.1 0.00	0.14	31	153	16	105	0	IMR
J. R. Morris, domestic	32N/11W-35G1	6- -61		322	7.1	37 1.85	8.9 0.73	14 0.61	2.6 0.07	158 0.00	2.59	12 0.25	12 0.34	1.6 0.03	0.1 0.00	0.04	23	190	19	129	0	IMR
Jacoby Creek School, domestic	IB & M 5N/1E-4H2	8-4-61		404	8.4	23 1.15	20 1.07	31 1.35	3.8 0.10	207 0.07	3.39	2.1 0.04	27 0.76	1.3 0.02	0.0 0.00	0.14	18	130	32	141	0	IMR
Lend Portland Lumber Co., industrial	-3J1	8-25-61		301	8.0	18 0.90	12 1.02	28 1.22	1.5 0.04	160 0.00	2.62	1.3 0.03	18 0.51	0.0 0.00	0.0 0.00	0.00	29	197	38	96	0	IMR
F. Coleman, domestic & irrigation	6N/1E-7M1	10-14-61		445	8.2	39 1.95	26 2.17	15 0.65	2.4 0.06	249 0.00	4.03	1.3 0.03	25 0.70	1.0 0.02	0.2 0.01	0.13	20	252	13	206	2	IMR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{100}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm
C. Barber, domestic	ED & M 6N/1E-3HL	8-25-61		211	7.0	11 0.55	7.2 0.59	15 0.65	3.4 0.09	0	41 0.67	13 0.37	17 0.43	25 0.40	0.2 0.01	0.02	31	Cu 0.02, Fe (total) 0.02, Zn 1.2	57	34	21	IWR
Iverson, irrigation	-17HL	8-4-61		398	8.3	44 2.20	22 1.04	6.7 0.38	1.2 0.03	0	248 4.06	1.5 0.03	11 0.31	1.6 0.02	0.2 0.01	0.11	40	Cu 0.02, Fe (total) 0.02, Pb 0.04, Mn 2.3, Zn 0.15	202	8	0	IWR
N. Holgerson, domestic & stock	-19QL	8-4-61		374	8.3	52 2.59	13 1.09	10 0.44	1.2 0.03	0	235 3.85	0.0 0.00	11 0.31	1.0 0.01	0.1 0.00	0.07	24	As 0.01, Fe (total) 0.01, Pb 0.04, Mn 0.95, Zn 0.15	184	11	0	IWR
Mrs. E. North, domestic & irrigation	-30HL	10-14-61		334	8.5	46 2.30	11 0.52	9.0 0.39	1.2 0.03	7 0.23	190 3.11	0.0 0.00	11 0.31	0.4 0.01	0.2 0.01	0.05	31	Al 0.01, Fe (total) 0.02, Pb 0.04, Zn 0.15	161	11	0	IWR
Arcata Plywood Plant, industrial	-32FL	7-31-61		758	8.2	14 0.70	11 0.50	131 5.70	7.0 0.13	0	273 4.47	0.2 0.00	103 2.90	2.6 0.04	0.2 0.01	0.59	27	Al 0.02, Fe (total) 0.01, Zn 0.04	80	76	0	IWR
Ace Bulb Farm, domestic & irrigation	6N/1W-1HL	8-4-61		174	6.9	5.3 0.26	6.3 0.32	16 0.70	0.6 0.02	0	30 0.49	4.3 0.05	20 0.56	26 0.42	0.0 0.00	0.04	15	Cu 0.01, Fe (total) 0.39, Pb 0.02, Zn 3.5	39	47	14	IWR
G. A. Curtis, domestic	7N/1E-18QL	8-4-61		292	8.2	16 0.80	16 1.32	22 0.96	1.0 0.02	0	153 2.51	2.0 0.04	12 0.34	14 0.22	0.0 0.00	0.04	26	Cu 0.01, Fe (total) 0.39, Pb 0.04, Zn 0.11	106	31	0	IWR
T. Galey	-30BL	8-14-61		113	7.2	4.5 0.22	5.6 0.46	8.7 0.38	0.5 0.01	0	42 0.69	7.6 0.16	6.5 0.18	6.3 0.10	0.1 0.00	0.04	24	Cu 0.02, Fe (total) 0.07, Pb 0.02, Zn 2.9	34	36	0	IWR
S. Christensen, irrigation	3N/1W-5KL	10-16-61		142	7.5	6.2 0.31	5.7 0.47	13 0.56	0.3 0.02	0	56 0.92	2.1 0.04	14 0.37	0.4 0.01	0.2 0.01	0.00	31	Fe (total) 0.40, Zn 0.08	39	41	0	IWR
P.G. & E., industrial	4N/1W-8FL	10-16-61		157	7.5	5.9 0.28	8.9 0.73	11 0.43	1.7 0.04	0	67 1.10	3.3 0.07	14 0.39	0.1 0.00	0.1 0.00	0.02	22	Cu 0.01, Fe (total) 0.12, Zn 0.04	51	31	0	IWR
P. Lorenzen, irrigation	-16HL	10-13-61		536	8.3	41 2.04	27 2.20	32 1.39	5.8 0.15	0	290 4.75	5.1 0.11	28 0.79	6.1 0.10	0.1 0.00	0.18	47	Fe (total) 0.76, Zn 0.03	212	24	0	IWR
P.G. & E.	-17FL	10-16-61		161	7.8	7.4 0.37	8.4 0.65	11 0.43	1.6 0.04	0	70 1.15	2.8 0.06	14 0.35	0.3 0.00	0.2 0.01	0.04	21	Cu 0.01, Fe (total) 0.11, Pb 0.04, Zn 0.05	53	30	0	IWR
Arcata Redwood Co., domestic & industrial	5N/1E-18QL	10-12-61		869	7.8	16 0.80	15 1.24	150 6.52	4.4 0.11	0	343 5.62	6.0 0.00	105 3.07	2.1 0.03	0.2 0.01	1.7	50	Cu 0.01, Fe (total) 0.40, Zn 0.85	102	75	0	IWR
L. L. Spinney, domestic & stock	-20QL	10-12-61		274	7.6	14 0.70	12 0.96	22 0.96	1.4 0.04	0	110 1.80	2.0 0.04	30 0.85	0.3 0.00	0.1 0.00	0.00	35	Al 0.01, Fe (total) 0.01, Zn 0.01	83	36	0	IWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos/cm at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)		Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm	
A. Capell, irrigation A. Johnson, domestic & irrigation	HB & M 2N/1W-4M	9-5-61		481	7.8	67 3.34	18 1.46	8.8 0.36	2.4 0.05	260 0.00	4.26	0.94	8.0 0.22	8.5 0.14	0.1 0.00	0.13	14	Fe (total) 0.05 Zn 0.08	281	7	240	27	IMR
	-12M	9-21-61		201	7.8	13 0.65	9.1 0.73	14 0.61	0.8 0.02	100 0.00	1.64	4.6 0.10	10 0.28	1.1 0.02	0.2 0.01	0.02	27	Al 0.01, Fe (total) 0.34, Mn 0.26, Zn 0.02	129	30	70	0	IMR
	-17M	8-31-61		559	7.9	34 1.70	31 2.53	32 1.39	2.7 0.07	212 0.00	3.47	55 1.14	38 1.07	0.8 0.01	0.1 0.00	0.08	22	Fe (total) 1.5, Mn 0.95, Zn 0.03	320	24	214	40	IMR
	3N/1W-18M	10-17-61		491	8.2	30 1.50	37 3.02	21 0.91	2.8 0.07	281 0.00	4.60	23 0.45	14 0.35	1.3 0.02	0.4 0.02	0.07	25	Fe (total) 0.95, Cu 0.02, Pb 0.01, Mn 0.22, Zn 0.06	292	16	206	0	IMR
C. Goble, irrigation	-25M	8-31-61		497	8.3	29 1.45	35 2.85	25 1.09	2.8 0.07	278 0.00	4.56	16 0.33	18 0.51	1.8 0.03	0.4 0.02	0.13	19	Al 0.01, Fe (total) 0.14, Mn 0.31, Zn 0.01	284	20	215	0	IMR
R. Tedson, irrigation	-30M	10-23-61		453	8.2	44 2.20	27 2.26	2.8 0.43	1.8 0.05	224 0.00	3.67	28 0.58	12 0.34	17 0.27	0.1 0.00	0.15	19	Cu 0.01, Fe (total) 0.02, Pb 0.01, Zn 0.27	269	9	223	39	IMR
J. V. Toste	3N/2W-2M2	10-25-61		1,960	7.8	72 3.59	83 6.80	178 7.74	2.3 0.06	78 0.00	1.28	24 0.50	574 1.75	6.8 0.11	0.2 0.01	0.06	20	Fe (total) 0.10, Pb 0.01, Zn 0.05	998	42	520	456	IMR
P. M. Christensen, irrigation	-27M	8-31-61		6,860	7.5	194 5.68	261 23.05	770 33.50	22 0.56	228 0.00	3.74	153 3.14	2,150 60.03	7.6 0.12	0.2 0.01	0.20	24	Fe (total) 2.0, Mn 4.6	3,710	50	1,640	1,450	IMR
R. Connick Co., irrigation	-32M	10-25-61		1,700	8.2	43 2.14	54 4.47	220 5.57	4.4 0.11	220 0.00	3.60	40 0.93	411 11.59	2.3 0.04	0.5 0.03	0.15	24	Cu 0.03, Fe (total) 0.62, Pb 0.01, Mn 1.6, Zn 0.05	907	59	331	151	IMR
P. C. Lorenzen, irrigation	-35M	10-11-61		1,130	7.9	47 2.34	60 4.55	78 3.35	13 0.33	265 0.00	4.34	31 0.74	212 5.58	1.1 0.02	0.2 0.01	0.08	27	Fe (total) 1.6, Mn 0.05, Zn 0.01	599	31	365	143	IMR
W. B. Mooy, domestic & irrigation	MDRM 22N/12W-612	8-16-61		412	8.1	46 2.30	20 1.66	16 0.70	0.8 0.02	272 0.00	4.46	0.0 0.00	3.3 0.05	2.6 0.04	0.1 0.00	0.14	28	Cu 0.06, Fe (total) 0.15, Pb 0.01, Mn 2.0, Zn 0.04	251	15	198	0	IMR
C. R. Ruhn, irrigation	-15M	8-16-61		498	8.4	34 1.70	44 3.61	11 0.43	0.6 0.02	2 0.07	4.98	25 0.58	5.5 0.15	4.2 0.07	0.1 0.00	0.08	27	Cu 0.03, Fe (total) 0.04, Pb 0.01, Zn 0.13	302	8	266	14	IMR
H. Hurt, domestic	22N/13W-17	8-16-61		214	7.9	21 1.05	11 0.93	6.8 0.30	0.6 0.02	0 0.00	11.3	10 0.21	4.2 0.12	3.6 0.06	0.4 0.00	0.11	13	Fe (total) 0.16, Pb 0.00, Mn 0.01, Zn 0.45	126	13	99	6	IMR
R. T. Hurt, irrigation	-12M	8-16-61		348	8.2	34 1.70	17 1.34	20 0.87	0.6 0.02	0 0.00	21.6	6.2 0.13	6.4 0.19	0.2 0.00	0.3 0.02	0.11	23	As 0.02, Fe (total) 0.09, Pb 0.02, Mn 1.5, Zn 0.01	214	22	154	0	IMR

g. Determined by addition of constituents.

h. Gravimetric determination.

i. Surveyed by the California State Water Resources Control Board, California State Water Resources Control Board, California State Water Resources Control Board.

j. Tested by the Laboratory (LTL) or State Department of Water Resources (DWR) as indicated.

k. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{20}{800}$ except as shown

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Owner and use	Stats well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Fluo- ride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
F. F. Rohrbaugh, domestic	NIB&M 22N/13W-13A1	8-16-61		244	8.0	20 1.00	12 0.38	13 0.56	0.8 0.02	0 0.00	116 1.50	13 0.27	10 0.28	2.4 0.04	0.1 0.00	0.18	15	Fe (total) 0.04, Zn 0.23	143	22	99	44	IMR
		8-16-61		221	7.4	23 1.15	10 0.33	9.0 0.39	0.8 0.02	0 0.00	126 2.06	6.6 0.14	2.7 0.08	1.8 0.03	0.1 0.00	0.08	16	AlO ₃ .01, AsO ₃ .02, CuO ₃ .01, Fe (total) 0.15, MnO ₃ .30, ZnO ₃ .08	132	16	99	0	IMR
G. Graver, irrigation.	-31W1	8-16-61		241	7.7	29 1.45	9.6 0.79	8.2 0.36	0.8 0.02	0 0.00	141 2.31	6.4 0.13	3.3 0.09	0.5 0.01	0.1 0.00	0.06	14	AlO ₃ .02, AsO ₃ .01, Cu 0.04, Fe (total) 1.5, FeO ₃ .01, MnO ₃ .24, Zn 0.05	141	14	112	0	IMR
E. Bener, domestic, irrigation & stock	23N/12W-33L1	8-16-61		609	8.3	56 3.29	32 2.68	30 1.30	0.6 0.02	0 0.00	427 7.00	0.0 0.00	3.1 0.09	4.0 0.06	0.4 0.02	0.17	20	AlO ₃ .03, AsO ₃ .12, Cu 0.05, Fe (total) 0.37, FeO ₃ .02, MnO ₃ .2, Zn 0.14	376	18	299	0	IMR
W. V. Clark, domestic & irrigation	23N/13W-25P1	8-16-61		232	7.8	33 1.65	6.7 0.55	5.2 0.23	1.0 0.02	0 0.00	127 2.08	11 0.23	3.1 0.09	1.5 0.02	0.0 0.00	0.07	12	Fe (total) 0.03, Zn 0.04	232	9	136	0	IMR
C. A. Gray, irrigation	-36P2	8-16-61		223	7.8	24 1.20	10 0.82	7.0 0.30	0.9 0.02	0 0.00	116 1.90	9.0 0.19	4.2 0.12	5.6 0.09	0.0 0.00	0.11	16	AlO ₃ .14, Fe (total) 1.34 0.22, MnO ₃ .02, Zn 0.08	134	13	101	6	IMR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{mg}{L}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million equivalents per million										Total dissolved solids in ppm _a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents ^d		Total ppm
E. B. Miller domestic	MDB&M 14N/12W-5K1	9-61	588	8.4	57 2.34	21 1.72	38 1.65	1.8 0.05	3 0.10	301 4.93	57 1.19	6.5 0.18	1.3 0.02	0.4 0.02	0.85	24	Fe 0.44 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.05	26	228	0	DWR
	14N/12W-26K1	9-61	362	8.3	24 1.20	22 1.82	17 0.74	0.4 0.01	0 0.00	194 3.18	5.4 0.11	16 0.45	0.2 0.00	0.3 0.02	2.3	30	Fe 0.38 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.22 Zn 0.01	20	151	0	DWR
Regina Water Co. municipal	15N/12W-21H1	9-61	242	7.9	24 1.20	12 1.02	9.6 0.42	1.1 0.03	0 0.00	144 3.36	6.1 0.13	8.7 0.24	0.7 0.01	0.2 0.01	0.61	15	Fe 0.03 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.00	16	111	0	DWR
D. Broggi domestic and irrigation	15N/12W-35D1	9-61	443	7.5	40 2.00	14 1.20	31 1.35	0.5 0.01	0 0.00	234 3.84	4.6 0.10	22 0.62	0.4 0.01	0.3 0.02	0.19	46	Fe 0.53 (Total) Al 0.00 As 0.00 Cu 0.01 Pb 0.00 Mn 0.24 Zn 0.19	30	160	0	DWR
P. Brown domestic	16N/12W-5D1	9-61	356	8.1	21 1.05	20 1.63	24 1.04	0.7 0.02	0 0.00	176 2.88	1.8 0.04	25 0.70	0.4 0.01	0.3 0.02	0.03	30	Fe 0.00 (Total) Al 0.01 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.21	28	134	0	DWR
P. Brown irrigation	16N/12W-5D2	9-61	325	8.0	17 0.85	18 1.47	28 1.22	0.7 0.02	0 0.00	179 2.93	1.5 0.03	16 0.45	2.4 0.04	0.4 0.02	0.06	25	Fe 0.43 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.25	34	116	0	DWR
P. G. & E. domestic and industrial	16N/12W-9Q1	9-61	414	8.8	28 1.40	17 1.38	38 1.65	0.9 0.02	16 0.53	219 3.59	7.2 0.15	7.8 0.22	0.2 0.00	0.5 0.03	0.10	30	Fe 1.2 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.32 Zn 0.24	37	139	0	DWR
J. E. Nelson domestic	17N/12W-18A1	9-61	1950	7.9	38 1.90	5.6 0.46	355 15.44	0.9 0.02	0 0.00	223 3.65	0.0 0.00	513 14.47	1.5 0.02	0.8 0.04	84	22	Fe 0.65 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.09	87	118	0	DWR
H. Mathews domestic	17N/12W-28M1	9-61	205	7.0	14 0.70	11 0.90	10 0.44	0.4 0.01	0 0.00	73 1.20	16 0.33	7.0 0.20	0.1 0.00	0.1 0.00	0.04	32	Fe 0.14 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.07 Zn 0.21	21	80	20	DWR
A. DeMarcantonio domestic	12N/11W-2F1	9-61	409	8.8	44 2.20	21 1.74	11 0.48	1.4 0.04	12 0.40	215 3.52	19 0.40	6.0 0.17	0.5 0.01	0.2 0.01	0.34	18	Fe 0.04 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.13	11	197	0	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents ^d		Total ppm	N.C. ppm
	<u>MDBSM</u>							<u>SANUEL VALLEY (1-16) (Cont.)</u>														
E. F. Hawn irrigation	13N/11W-7D1	9-61		356	8.6	23 1.15	27 2.23	9.2 0.40	0.5 0.01	6 0.20	14 0.29	5.5 0.16	0.4 0.01	0.2 0.01	0.23	21	Fe 0.63 (Total) Al 0.00 As 0.00 Cu 0.04 Pb 0.00 Mn 0.14 Zn 0.01	201	10	169	2	DMR
A. Damiano irrigation	13N/11W-18B1	9-61		359	8.6	24 1.20	22 1.78	17 0.74	1.0 0.02	5 0.17	13 0.27	8.5 0.24	12 0.19	0.2 0.01	2.3	19	Fe 0.00 (Total) Al 0.02 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.02	212	20	149	0	DMR
J. H. Pomroy Co. irrigation	13N/11W-18D1	9-61		191	8.3	17 0.85	10 0.83	6.4 0.28	0.8 0.02	0 0.00	6.6 0.14	4.0 0.11	1.0 0.02	0.1 0.00	0.29	16	Fe 0.56 (Total) Al 0.00 As 0.00 Cu 0.02 Pb 0.00 Mn 0.00 Zn 0.02	113	14	84	0	DMR
Hopland Public Utility District municipal	13N/11W-19N1	9-61		318	8.7	27 1.35	20 1.63	7.6 0.33	0.7 0.02	7 0.23	20 0.42	6.6 0.19	0.9 0.01	0.1 0.00	0.27	20	Fe 0.00 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.05	184	10	149	14	DMR
Grace Ranch domestic, stock, and irrigation	13N/11W-30H1	9-61		351	8.6	28 1.40	21 1.76	9.7 0.42	1.0 0.02	4 0.13	19 0.40	8.0 0.22	12 0.19	0.1 0.00	0.28	20	Fe 0.08 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.01 Mn 0.00 Zn 0.02	203	12	158	18	DMR
Redwood Hereford Ranch domestic and irrigation	9N/8W-7Q1	8-21-61		551	8.3	3.7 0.18	2.2 0.18	118 5.13	5.0 0.13	0 0.00	0.0 0.00	33 0.93	0.5 0.01	0.8 0.04	0.32	95	Fe 0.12 (Total) Al 0.00 As 0.01 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.45	400	91	18	0	DMR
H. Dick irrigation	9N/9W-1P1	9-61		304	8.0	19 0.95	23 1.93	10 0.44	0.7 0.02	0 0.00	12 0.25	6.2 0.17	2.1 0.03	0.2 0.01	0.09	16	Fe 3.6 (Total) Al 0.00 As 0.00 Cu 0.02 Pb 0.00 Mn 0.00 Zn 0.05	175	13	144	0	DMR
W. D. Dana irrigation	10N/9W-26L1	9-61		513	8.4	29 1.45	47 3.84	12 0.52	0.4 0.01	6 0.20	12 0.25	8.3 0.23	1.3 0.21	0.2 0.01	0.17	38	Fe 0.02 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.02	313	9	265	9	DMR
Italian Swiss Colony irrigation	11N/10W-28N1	9-61		364	8.1	43 2.14	17 1.42	9.4 0.41	1.0 0.02	0 0.00	9.4 0.20	4.6 0.13	0.6 0.01	0.0 0.00	0.29	21	Fe 0.02 (Total) Al 0.03 As 0.00 Cu 0.02 Pb 0.01 Mn 0.00 Zn 0.03	215	10	178	0	DMR
Italian Swiss Colony domestic and industrial	11N/10W-33A1	9-61		229	7.8	22 1.10	12 0.96	9.2 0.40	1.2 0.03	0 0.00	5.1 0.11	4.6 0.13	0.8 0.01	0.1 0.00	0.67	17	Fe 0.04 (Total) Al 0.07 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.06	139	16	103	0	DMR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

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ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm _a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)			Nitrate (NO ₃)	Fluoride (F)		Boron (B)	Silica (SiO ₂)	Other constituents ^d	Total ppm
	<u>NDB&M</u>																					
C. Pellegrini domestic	11N/10W-33G1	9-61		199	6.9	10 0.50	8.3 0.68	15 0.65	0.9 0.02	0 0.00	55 0.90	4.4 0.09	21 0.59	20 0.32	0.1 0.00	0.07	36	Fe 0.01 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 12	143	35	59 14	DWR
R. R. Matrri irrigation	5N/9W-3F1	9-61		523	8.2	11 0.55	5.2 0.43	102 4.44	1.2 0.03	0 0.00	239 3.92	28 0.58	30 0.85	0.8 0.01	0.4 0.02	0.68	28	Fe 0.01 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.01	325	81	49 0	DWR
G. L. Crane irrigation	6N/7W-17E1	9-61		453	8.0	4.4 0.22	0.5 0.04	98 4.26	0.9 0.02	0 0.00	211 3.46	4.1 0.08	34 0.96	1.3 0.02	1.4 0.07	2.0	32	Fe 0.79 (Total) Al 0.00 As 0.00 Cu 0.01 Pb 0.02 Mn 0.00 Zn 0.22	283	94	13 0	DWR
J. J. Wilson irrigation	6N/7W-18R1	9-61		762	8.3	57 2.84	37 3.07	56 2.44	1.4 0.04	0 0.00	356 5.83	36 0.75	49 1.38	27 0.44	0.3 0.02	0.22	56	Fe 0.00 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.51	495	29	296 4	DWR
T. Carley irrigation	6N/7W-30D1	9-61		360	8.1	32 1.60	18 1.50	17 0.74	1.2 0.03	0 0.00	200 3.28	4.0 0.08	9.2 0.26	8.9 0.14	0.1 0.00	0.05	68	Fe 0.02 (Total) Al 0.03 As 0.00 Cu 0.02 Pb 0.01 Mn 0.00 Zn 0.04	256	19	155 0	DWR
G. Mallory domestic	6N/8W-3B1	9-61		413	8.0	27 1.35	22 1.79	18 0.78	1.6 0.04	0 0.00	136 2.23	9.2 0.19	41 1.16	20 0.32	0.0 0.00	0.04	44	Fe 0.17 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.01 Mn 0.00 Zn 1.6	250	20	157 45	DWR
J. Pedranzini irrigation	6N/8W-16R1	9-61		430	8.0	17 0.85	13 1.07	56 2.44	2.0 0.05	0 0.00	203 3.33	0.0 0.00	37 1.04	0.7 0.01	0.3 0.02	0.11	68	Fe 0.44 (Total) Al 0.04 As 0.01 Cu 0.02 Pb 0.01 Mn 0.50 Zn 0.05	294	55	96 0	DWR
Cotati Public Utility District municipal	6N/8W-35A2	9-61		295	7.7	14 0.70	7.8 0.64	35 1.52	1.7 0.04	0 0.00	112 1.84	5.6 0.12	33 0.93	0.3 0.00	0.3 0.02	0.05	69	Fe 0.19 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.02	222	52	67 0	DWR
City of Sebastopol municipal	6N/9W-2G1	9-61																Fe 0.20 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.08				DWR
Kenwood Fire Department municipal	7N/6W-29P1	9-61		243	7.9	16 0.80	12 0.96	19 0.83	1.9 0.05	0 0.00	153 2.51	0.0 0.00	5.6 0.16	0.5 0.01	0.2 0.01	0.05	59	Fe 0.16 (Total) Al 0.04 As 0.00 Cu 0.00 Pb 0.01 Mn 0.26 Zn 0.66	189	31	88 0	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos of 25° C)	pH	Mineral constituents in parts per million equivalents per million										Total dissolved solids in ppm _a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-troate (NO ₃)	Fluo-ride (F)	Boron (B)			Silico (SiO ₂)	Other constituents ^d		Total ppm
	<u>NDB&M</u>							<u>SANTA ROSA VALLEY (1-18) (Cont.)</u>													
Annadel Farms irrigation	7N/7W-14P1	9-61		830	8.1	57 2.84	17 1.42	81 3.52	2.5 0.06	0 0.00	178 2.92	36 0.75	142 4.00	13 0.21	0.2 0.01	0.14	44	481	45	213	67 DWR
M. Clarke domestic and irrigation	7N/7W-15C1	9-61		250	7.8	13 0.65	12 0.97	22 0.96	4.4 0.11	0 0.00	150 2.46	3.1 0.06	5.8 0.16	0.5 0.01	0.3 0.02	0.08	73	208	36	81	0 DWR
E. F. Bethards domestic and irrigation	7N/7W-29D1	9-61		484	8.2	30 1.50	19 1.58	45 1.96	6.8 0.17	0 0.00	290 4.75	0 0.00	19 0.54	0.3 0.00	0.2 0.01	0.41	91	354	38	154	0 DWR
W. E. Samuelson domestic	7N/8W-3L1	9-61		448	8.1	24 1.20	17 1.40	43 1.87	2.7 0.07	0 0.00	206 3.38	36 0.75	15 0.42	0.2 0.00	0.4 0.02	0.11	70	309	41	130	0 DWR
C. Bordesa domestic	7N/8W-5G1	9-61		484	8.0	24 1.20	25 2.08	27 1.17	4.9 0.12	0 0.00	150 2.46	4.9 0.10	49 1.38	30 0.48	0.2 0.01	0.08	83	322	26	164	41 DWR
	7N/8W-13P1	9-61																		DWR	
Sessiona Hereford Ranch	7N/8W-24A6	9-61																		DWR	
C. Dotci irrigation	7N/8W-31C1	9-61		473	8.1	28 1.40	4.4 0.36	71 3.09	3.1 0.08	0 0.00	259 4.24	0.0 0.00	27 0.76	0.5 0.01	0.1 0.00	0.11	47	308	63	88	0 DWR
A. Marks domestic and irrigation	7N/8W-33W1	9-61		367	8.1	22 1.10	15 1.22	33 1.44	1.5 0.04	0 0.00	201 3.29	2.3 0.05	17 0.48	0.3 0.00	0.1 0.00	0.09	53	243	38	116	0 DWR
C. W. Gilbert irrigation	7N/9W-9F1	9-61		155	7.6	11 0.55	3.5 0.29	15 0.65	1.5 0.04	0 0.00	60 0.98	6.7 0.14	12 0.34	0.5 0.01	0.3 0.02	0.01	66	146	42	42	0 DWR
A. Helvig domestic and irrigation	7N/9W-29R1	9-61		175	7.3	13 0.65	3.5 0.29	15 0.65	1.7 0.04	0 0.00	57 0.93	16. 0.33	14 0.39	0.6 0.01	0.1 0.00	0.00	66	158	40	47	0 DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch, U.S.G.S., Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
																		Total ppm	N.C. ppm			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ide (NO ₃)	Fluo-ride (F)						Boron (B)	Silica (SiO ₂)
	MDR&M							SANTA ROSA VALLEY (1-18) (Cont.)														
Sebastopol Meat Co. industrial and irrigation	7N/9N-36M1	9-61		467	8.0	34 1.70	11 0.92	46 2.00	1.5 0.04	0 0.00	212 3.47	5.8 0.12	38 1.07	0.6 0.01	0.2 0.01	0.06	45	Fe 0.74 (Total) Al 0.00 As 0.00 Cu 0.01 Pb 0.00 Mn 0.00 Zn 0.65	286	43	0	DWR
	8N/8W-20Q1	9-61		535	8.2	24 1.20	24 1.96	51 2.22	7.6 0.19	0 0.00	267 4.38	18 0.37	30 0.85	0.3 0.00	0.3 0.02	0.16	83	Fe 0.14 (Total) Al 0.02 As 0.00 Cu 0.03 Pb 0.00 Mn 0.00 Zn 0.10	369	40	0	DWR
Frei Brothers domestic and industrial	9N/10W-1C1	9-61		216	7.8	15 0.75	9.1 0.75	18 0.78	0.8 0.02	0 0.00	129 2.11	0.0 0.00	6.8 0.19	0.2 0.00	0.4 0.02	0.02	58	Fe 0.52 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.01 Mn 0.11 Zn 0.18	171	34	0	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm _a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c												
						equivalents per million												Silica (SiO ₂)	Other constituents ^d		Total ppm	N.C. ppm										
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃) ¹	Bicar-bonate (HCO ₃) ¹	Sul-fate (SO ₄) ¹	Chlo-ride (Cl)	Ni-t rate (NO ₃) ¹	Flua-ride (F)								Boran (B)									
H. Cloakie domestic and stock	3N/6W-1Q1	4-17-61		1290	7.9	31 1.55	30 2.49	220 9.57	4.3 0.11	0 0.00	587 9.62	0.0 0.00	137 3.86	0.7 0.01	0.2 0.01	0.33	39	Fe 0.00 (Dissolved) Al 0.03 As 0.01 Cu 0.01 Pb 0.00 Mn 0.00 Zn 0.02 Cr 0.00 ABS 0.0	752	70	202	0	DMR									
O. White domestic and irrigation	3N/6W-3C1	4-17-61	62	4060	7.9	147 7.34	205 16.84	350 15.22	18 0.46	0 0.00	520 8.52	0.0 0.00	1100 31.02	1.1 0.02	0.2 0.01	0.30	37	Fe 0.27 (Dissolved) Al 0.00 As 0.02 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.01 Cr 0.00 ABS 0.0	2130	38	1210	784	DMR									
W. Wright stock	3N/6W-5A1	4-17-61	62	11000	8.0	189 9.43	398 32.73	1700 73.95	22 0.56	0 0.00	838 13.73	0.0 0.00	3580 100.96	1.0 0.16	0.3 0.02	0.44	37	Fe 0.00 (Dissolved) Al 0.06 As 0.00 Cu 0.03 Pb 0.00 Mn 0.00 Zn 0.00 Cr 0.00 ABS 0.0	6350	63	2110	1420	DMR									
S. K. Herzog Co. domestic and dairy	3N/6W-11B1	4-17-61	64	10900	7.7	40 2.00	45 3.67	318 13.83	6.3 0.16	0 0.00	567 9.29	0.0 0.00	354 9.98	1.3 0.21	0.1 0.00	0.31	46	Fe 0.00 (Dissolved) Al 0.01 As 0.00 Cu 0.00 Pb 0.01 Mn 0.00 Zn 0.01 Cr 0.00 ABS 0.0	1100	70	284	0	DMR									
C. Strozzi stock	3N/6W-15M1	4-17-61	57	460	6.8	40 2.00	15 1.26	26 1.13	1.8 0.05	0 0.00	111 1.82	60 1.25	41 1.16	3.8 0.06	0.2 0.01	0.07	28	Fe 0.00 (Dissolved) Al 0.00 As 0.00 Cu 0.01 Pb 0.00 Mn 0.00 Zn 0.04 Cr 0.00 ABS 0.0	270	25	163	72	DMR									
Rupprecht domestic, stock, and irrigation	3N/6W-18M1	4-17-61	76	657	7.0	34 1.70	44 3.61	28 1.22	0.3 0.01	0 0.00	169 2.77	44 0.92	50 1.41	7.7 1.24	0.2 0.01	0.09	25	Fe 0.00 (Dissolved) Al 0.00 As 0.00 Cu 0.00 Pb 0.01 Mn 0.00 Zn 0.03 Cr 0.00 ABS 0.0	386	19	266	128	DMR									
		9-13-61		616									52 1.47	5.2 0.84							246		DMR									

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c					
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm		
K. Johnson domestic	MDB&M 3N/7W-14F1	4-17-61	676	8.3		PETALUMA VALLEY (2-1) (Cont.)																			
							22 1.10	35 2.90	64 2.78	0.9 0.02	0 0.00	247 4.05	29 0.60	75 2.12	0.8 0.01	0.7 0.04	0.62	35	Fe 0.04(Dissolved) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.53 Zn 0.03 Cr 0.00 ABS 0.0	384	41	200 0	DWR		
Lopes domestic	4N/6W-7H1	9-13-61	662	8.2																					
							34 1.70	72 5.89	91 3.96	0.6 0.02	0 0.00	551 9.03	34 0.71	61 1.72	16 0.26	0.4 0.02	2.0	22	Fe 0.00(Dissolved) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.00 Cr 0.00 ABS 0.0	604	34	380 0	DWR		
Lopes irrigation	4N/6W-7H2	4-17-61	2500	8.6																					
							62 3.09	76 6.26	397 17.27	1.9 0.05	24 0.80	516 8.46	126 2.62	497 14.07	19 0.31	0.5 0.03	2.6	19	Fe 0.00(Dissolved) Al 0.00 As 0.00 Cu 0.01 Pb 0.03 Mn 0.00 Zn 0.31 Cr 0.00 ABS 0.0	1480	65	468 6	DWR		
L. A. Bourke domestic and stock	4N/6W-21Q1	4-17-61	1020	8.2																					
							14 0.70	11 0.88	201 8.74	1.6 0.04	0 0.00	382 6.26	24 0.50	124 3.50	0.5 0.01	0.2 0.01	0.90	44	Fe 0.06(Dissolved) Al 0.00 As 0.01 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.01 Cr 0.00 ABS 0.0	609	84	79 0	DWR		
L. A. Bourke stock	4N/6W-27N1	9-61	1020																						
S. K. Herzog dairy and stock	4N/6W-27R1	4-17-61	1120	8.3																					
							42 2.10	31 2.56	159 6.92	2.1 0.05	0 0.00	438 7.18	13 0.27	145 4.09	1.0 0.02	0.2 0.01	0.97	25	Fe 0.00(Dissolved) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Cr 0.00 ABS 0.0	634	60	233 0	DWR		
O. White irrigation and stock	4N/6W-33R1	4-17-61	4010	8.2																					
							164 8.18	209 17.19	336 14.62	19 0.49	0 0.00	532 8.72	0.0 0.00	1090 30.74	7.6 0.12	0.2 0.01	0.29	43	Fe 0.00(Dissolved) Al 0.00 As 0.01 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.57 Cr 0.00 ABS 0.0	2130	36	1270 834	DWR		
Union Oil Co. industrial	4N/7W-2D1	9-61	5530																						
		9-61	24000																						

a. Determined by addition of constituents.

b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
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1961

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						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)	Boron (B)			Silico (SiO ₂)	Other constituents ^d		Total ppm	N.C. ppm			
Riehl domestic and stock	NDBCM SN/6W-3001	4-17-61		899	8.4	44 2.20	22 1.88	121 5.26	1.6 0.04	6 0.20	12 0.25	102 2.88	0.6 0.01	0.5 0.03	0.43	23	Fe 0.02(Dissolved) Al 0.00 As 0.01 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.07 Cr 0.00 ABS 0.0 ABS 0.0	515	56	204	0	DWR			
N. J. Matzen domestic Oberg Lumber Co. domestic	SN/7W-803 SN/7W-19A1	9-61 4-17-61		977 541	8.3	34 1.70	9.5 0.78	69 3.00	2.1 0.05	0 0.00	32 0.67	41 1.16	0.4 0.01	0.2 0.01	0.04	29	Fe 0.02(Dissolved) Al 0.00 As 0.00 Cu 0.00 Pb 0.02 Mn 0.00 Zn 0.06 Cr 0.00 ABS 0.0 ABS 0.0	329	54	124	0	DWR			
E. Scott irrigation and stock	SN/7W-20C1	9-61 4-17-61		917	7.7	78 3.89	32 2.64	61 2.65	2.4 0.06	0 0.00	152 3.16	109 3.07	0.6 0.01	0.3 0.02	0.08	46	Fe 0.00(Dissolved) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.09 Cr 0.01 ABS 0.0 ABS 0.0	572	29	327	175	DWR			
A. Barber Shop domestic	SN/7W-20L3	9-61 4-17-61		852	8.3	251 12.52	37 3.04	110 4.78	2.1 0.05	0 0.00	30 0.62	493 13.90	80 1.29	0.0 0.00	0.02	48	Fe 0.00(Dissolved) Al 0.04 As 0.00 Cu 0.01 Pb 0.01 Mn 0.04 Zn 0.07 Cr 0.00 ABS 0.0 ABS 0.0	1160	23	779	589	DWR			
City of Petaluma municipal R. E. Atkinson	SN/7W-22Q1 SN/7W-26E1	9-61 9-61		2100	8.0																				
City of Petaluma municipal City of Petaluma municipal G. E. F domestic	SN/7W-28A1 SN/7W-28H3 SN/7W-28N1	9-61 9-61 4-17-61		598 494 1400	8.0																				

a. Determined by addition of constituents.

b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

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1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm _B	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)			Fluoride (F)	Boron (B)		Silica (SiO ₂)	Other constituents ^d	Total ppm	N.C. ppm
H. E. Clark domestic, stock, and irrigation	5N/7W-34E2	4-17-61		847	8.6	PETALUMA VALLEY (2-1) (Cont.)								509	95	22	0	DWR				
R. H. Sartori irrigation	5N/7W-35K1	9-61		842												22		DWR				
E. P. Nunn domestic	3N/3W-18C1	4-18-61		890	8.1	NAPA-SONOMA VALLEY (2-2)								491	40	269	12	DWR				
D. L. Pickens domestic	3N/3W-18C2	4-18-61		1390	8.1									828	36	442	218	DWR				
Napa County Airport domestic	4N/4W-2L1	4-19-61	60	755	8.2									468	33	248	125	DWR				
N. Rhodes domestic	4N/4W-5C1	4-19-61		269	7.9									196	67	40	0	DWR				
		9-14-61		300												42		DWR				

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Mononitrate (Mn), Zinc (Zn), Detergent Surfactant (ABS).

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ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by ^c			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ate (NO ₃)			Fluo-ride (F)	Boron (B)		Silica (SiO ₂)	Other constituents ^d	Total ppm
Press Wireless domestic	MDB&M 4N/4W-7A1	4-19-61	487	8.2	14 0.70	11 0.90	68 2.96	1.0 0.02	0 0.00	130 2.13	3.0 0.06	81 2.28	0.7 0.01	0.2 0.01	0.08	48	291	65	80	0	DWR
G. Lawrence stock	4N/4W-13E1	4-19-61	2280	7.7	193 9.63	54 4.41	216 9.40	1.0 0.02	0 0.00	266 4.36	326 6.79	412 11.62	56 0.90	0.3 0.02	0.28	39	1430	40	703	485	DWR
H. Mini stock	4N/4W-25K1	4-19-61	1250	8.4	43 2.14	97 7.97	92 4.00	2.3 0.06	10 0.33	527 8.64	60 1.25	102 2.88	54 0.87	0.4 0.02	1.2	32	753	28	506	58	DWR
J. S. Navy municipal	4N/5W-14D2	4-18-61	957	8.4	12 0.60	8.5 0.70	181 7.87	3.0 0.08	6 0.20	297 4.87	48 1.00	119 3.36	0.8 0.01	0.4 0.02	0.15	82	607	85	65	0	DWR
Sonoma Ranch stock	4N/5W-32B1	9-61	943									119 3.36	0.7 0.01	ABS 0.0	65						DWR
Sonoma Ranch stock	4N/5W-34D1	4-18-61	62	2990	8.1	81 4.04	80 6.55	415 18.05	14 0.36	0 0.00	628 10.29	0.6 0.01	643 18.13	2.8 0.04	2.1	68	1620	62	530	15	DWR
M. L. George domestic	5N/4W-9Q2	4-19-61	466	8.1	20 1.00	15 1.24	53 2.30	0.7 0.02	0 0.00	220 3.60	7.9 0.16	32 0.90	0.1 0.00	0.5 0.03	0.08	57	294	50	112	0	DWR
		9-14-61	478									36 1.02									DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Monochloride (Mn), Zinc (Zn), Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm _a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c																																																																																																																																																																																																																																																																																																																																																																																																																						
						equivalents per million												Total ppm	N.C. ppm																																																																																																																																																																																																																																																																																																																																																																																																																							
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Potas-Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)						Boron (B)	Silica (SiO ₂)	Other constituents ^d																																																																																																																																																																																																																																																																																																																																																																																																																			
W. Gellenger domestic	MDB&M 5N/4W-11F3	4-19-61		698	8.3	16 0.80	7.0 0.58	121 5.26	5.7 0.14	0 0.00	252 4.13	0.0 0.00	94 2.65	0.7 0.01	0.5 0.03	2.2	74	Fe 0.04(Dissolved) Al 0.00 As 0.03 Cu 0.00 Pb 0.00 Mn 0.32 Zn 0.04 Cr 0.00 ABS 0.0	445	78	0	DWR																																																																																																																																																																																																																																																																																																																																																																																																																				
						P. A. Casser domestic and stock	5N/4W-14C1	4-19-61	63	237	7.4	14 0.70	9.5 0.78	17 0.74	2.3 0.06	0 0.00	102 1.67	4.6 0.10	18 0.51	0.6 0.01	0.2 0.01	0.06	66	Fe 0.17(Dissolved) Al 0.02 As 0.01 Cu 0.00 Pb 0.00 Mn 0.54 Zn 0.07 Cr 0.00 ABS 0.0	182	32	0	DWR																																																																																																																																																																																																																																																																																																																																																																																																														
												J. Healy domestic	5N/4W-15E1	4-19-61		404	8.5	25 1.25	9.4 0.77	48 2.09	2.6 0.07	4 0.13	188 3.08	0.0 0.00	34 0.96	0.6 0.01	0.3 0.02	0.11	56	Fe 0.01(Dissolved) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.28 Zn 0.10 Cr 0.00 ABS 0.0	272	50	0	DWR																																																																																																																																																																																																																																																																																																																																																																																																								
																		A. L. Poe domestic	5N/4W-21P2	4-19-61		2130	8.7	36 1.80	12 0.98	425 18.49	6.3 0.16	18 0.60	336 5.51	125 2.60	437 12.32	1.9 0.03	0.2 0.01	0.46	28	Fe 0.02(Dissolved) Al 0.02 As 0.02 Cu 0.01 Pb 0.00 Mn 0.00 Zn 0.02 Cr 0.00 ABS 0.0	1250	86	0	DWR																																																																																																																																																																																																																																																																																																																																																																																																		
Napa State Hospital irrigation Adams and Forbes industrial	5N/4W-23C2	9-14-61		2300																																																																																																																																																																																																																																																																																																																																																																																																																																						

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos of 25° C)	pH	Mineral constituents in parts per million equivalents per million										Total dissolved solids in ppm _a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents		Total ppm	N.C. ppm
L. Miglioretti domestic and irrigation	MDB&M 5N/5W-20R1	4-18-61		1020	8.6	17 0.85	8.9 0.73	208 9.05	NAWA-SONOMA VALLEY (2-2) (cont.)		16 0.33	88 2.48	0.8 0.01	0.1 0.00	4.3	25	Fe 0.00(Dissolved) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.06 Zn 0.30 Cr 0.00 ABS 0.0 ABS 0.0	605	85	79	0	DWR
E. L. Smith domestic and stock	5N/6W-12F1	4-18-61		852	7.7	16 0.80	14 1.16	41 1.78	1.5 0.04	0 0.00	8.9 0.18	20 0.56	3.3 0.05	0.2 0.01	0.47	59	Fe 0.00(Dissolved) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.06 Zn 0.34 Cr 0.00 ABS 0.0 ABS 0.0	253	47	98	0	DWR
M. Kiser irrigation	5N/6W-24K1	9-61		418								20 0.56	0.1 0.00				ABS 0.0			69		DWR
T. E. Connely domestic	5N/6W-25P1	4-18-61		508	8.3	28 1.40	18 1.48	43 1.87	2.3 0.06	0 0.00	6.2 0.13	69 1.94	2.6 0.04	0.2 0.01	0.09	83	Fe 0.00(Dissolved) Al 0.01 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.23 Cr 0.00 ABS 0.0 ABS 0.0	332	39	144	11	DWR
C. L. Barber irrigation	6N/4W-6P1	9-13-61		474								19 0.54	0.6 0.01				ABS 0.0			179		DWR
A. R. Johnson domestic and stock	6N/4W-15Q1	4-19-61		260	7.9	12 0.60	5.1 0.42	33 1.44	4.4 0.11	0 0.00	4.3 0.09	9.1 0.26	6.5 0.10	0.2 0.01	0.15	56	Fe 0.01(Dissolved) Al 0.00 As 0.01 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.26 Cr 0.00 ABS 0.0 ABS 0.0	193	56	51	0	DWR
R. Ohlandt irrigation	6N/4W-17A1	9-14-61		258								6.5 0.18								208		DWR
N. Tervio domestic	6N/6W-23M2	4-17-61	64	365	7.7	12 0.60	5.8 0.48	69 3.00	15 0.38	0 0.00	3.8 0.08	66 1.86	0.7 0.01	0.8 0.04	1.6	73	Fe 0.05(Dissolved) Al 0.00 As 0.00 Cu 0.00 Pb 0.02 Mn 0.30 Zn 0.40 Cr 0.00 ABS 0.0 ABS 0.0	321	67	54	0	DWR
		9-61		471								64 1.80	0.4 0.01							60		DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Monooxide (Mn), Zinc (Zn), Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm			
D. Stamos domestic	NDB&M 6N/6W-26E1	4-18-61		436	8.2	2.3 0.11	1.3 0.11	85 3.70	8.4 0.21	0 0.00	150 2.46	1.2 0.02	55 1.55	0.8 0.01	1.2 0.06	2.1	71	Fe 0.11 (Dissolved) Al 0.00 As 0.02 Cu 0.00 Pb 0.04 Mn 0.00 Zn 0.01 Cr 0.00 ABS 0.0	302	11	0	DWR				
A. G. Fagiani domestic	7N/4W-30L1	4-19-61		136	7.8	7.8 0.39	6.0 0.49	7.7 0.33	2.5 0.06	0 0.00	58 0.95	2.0 0.04	9.1 0.26	0.2 0.00	0.1 0.00	0.01	29	Fe 0.09 (Dissolved) Al 0.02 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.01 Cr 0.00 ABS 0.0	92	44	0	DWR				
Wheeler domestic and stock	7N/5W-5A1	4-19-61		493	8.4	41 2.04	26 2.14	19 0.83	7.7 0.20	2 0.07	205 3.36	47 0.98	18 0.51	15 0.24	0.2 0.01	0.46	31	Fe 0.01 (Dissolved) Al 0.01 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.06 Cr 0.00 ABS 0.0	307	209	39	DWR				
J. Alcouffe domestic and stock	9N/6W-31Q1	9-13-61		483																						
R. H. Archard domestic	9N/7W-25N1	4-19-61		858	8.1	11 0.55	5.2 0.43	148 6.44	8.0 0.20	0 0.00	179 2.93	0.0 0.00	165 4.65	1.0 0.02	6.0 0.32	10	71	Fe 1.0 (Total) Al 1.2 As 0.04 Cu 0.00 Pb 0.01 Mn 0.25 Zn 0.08	513	49	0	DWR				
Taylor domestic	3N/1E-48	5-18-61		1400																						
McDougal Livestock Co. domestic	3N/1E-21D1	5-18-61	56	1780																						
McDougal Livestock Co. domestic	3N/1E-22F2	5-18-61	68	1740	8.7	8.1 0.46	7.3 0.60	400 17.40	1.3 0.02	26 0.87	616 10.10	89 1.85	189 5.33	5.1 0.08	0.4 0.02	6.7	29			1060	50	0	DWR			
McDougal Livestock Co. domestic		9-11-61		1330	8.6	21 1.05	18 1.49	304 13.22	1.2 0.03	34 1.13	437 7.16	74 1.54	200 5.64	16 0.26	0.4 0.02	4.1	30			919	127	0	DWR			

a. Determined by addition of constituents.
b. Gravimetric determination.
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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm _a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents ^d		Total ppm	N.C. ppm
McDougal Livestock Co. irrigation	3N/1E-22F3	5-18-61		1250																DWR		
		9-11-61																		DWR		
	9-11-61																		DWR			
	State of California domestic	4N/1W-33A1	5-18-61		3570																DWR	
9-11-61																				DWR		
9-11-61		64	1450	7.8																DWR		
Southern Pacific RR. domestic		4N/2W-5Q2	5-18-61		376																DWR	
	9-11-61																			DWR		
	9-11-61																			DWR		
	F. P. Smith stock	4N/3W-13C2	9-11-61		1020	8.3																DWR
5N/2W-27J4			5-19-61	803																	DWR	
5N/2W-29L3		9-11-61	725	8.2																	DWR	
		5-18-61	371																		DWR	
City of Fairfield municipal	5N/2W-34B1	5-18-61		1060																	DWR	
		5-18-61	61	1870																	DWR	
	5N/2W-34P4	9-11-61	1910	7.6																	DWR	
																					DWR	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

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						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potass-ium (K)	Carbon-ate (CO ₃)	Bicarbonate (HCO ₃)	Sul-fate (SO ₄)	Chloride (Cl)	Ni-trate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm
Continental Can Co. Irrigation	2N/1E-7RL	6-12-61		2,470	7.8	175 8.73	87 7.15	242 10.53	9.2 0.24	0 0.00	347 5.69	468 9.74	390 11.00	0.1 0.00	0.5 0.03	0.55	31	1,570	40	795	511	DWR
	-22C1	6-12-61		1,410	8.2	23 4.64	45 3.73	150 6.52	6.1 0.16	0 0.00	326 5.34	352 7.33	92 2.59	1.3 0.02	0.4 0.02	0.60	44	944	43	419	152	DWR
	2N/2E-20A1	6-12-61		1,740	8.1	101 5.04	59 4.89	182 7.92	4.3 0.11	0 0.00	351 5.75	178 3.70	284 8.01	22 0.35	0.3 0.02	0.66	53	1,060	44	497	209	DWR
Fibreboard Products Inc. domestic																						

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC),
Fermion (Fe), Cadmium (Cd), Lead (Pb), Silver (Ag), Strontium (Sr), Sodium (Na), Potassium (K), Magnesium (Mg), Calcium (Ca),
Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.0 except as shown

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						equivalents per million																	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)				Boron (B)	Other constituents			
C. Curlette domestic and irrigation	1N/1W-4A1	6-6-61		600	7.7	45	37	25	0.6	0	272	49	26	7.9	0.2	0.46	31	ABS 0.0	356	17	264	41	DWR
						2.24	3.03	1.09	0.02	0.00	4.46	1.02	0.73	0.13	0.01								
S. H. Cowell Foundation irrigation	1N/1W-4R1	6-9-61	64	1050	7.2	69	53	62	0.5	0	286	54	146	31	0.3	0.41	37	ABS 0.0	594	26	391	157	DWR
						3.44	4.37	2.70	0.01	0.00	4.69	1.12	4.12	0.50	0.02								
F. Baker domestic	2N/1W-30J1	6-9-61		911	7.6	74	51	49	0.7	0	391	98	46	16	0.2	0.48	30	ABS 0.0	557	21	396	75	DWR
						3.69	4.22	2.13	0.02	0.00	6.41	2.04	1.30	0.26	0.01								
F. Derville domestic	2N/1W-31D1	6-9-61		916	7.4	73	52	33	0.4	0	287	71	89	50	0.2	0.33	31	ABS 0.0	541	15	398	163	DWR
						3.64	4.31	1.44	0.01	0.00	4.70	1.48	2.51	0.81	0.01								
R. B. Ogilvie domestic	2N/2W-13P1	6-12-61		787	8.4	34	25	93	1.0	5	230	52	95	11	0.5	0.35	35	ABS 0.0	465	52	188	0	DWR
						1.70	2.06	4.04	0.02	0.17	3.77	1.08	2.68	0.18	0.03								
Bertinola domestic	2N/2W-26B1	6-9-61		906	8.3	49	37	88	1.2	0	356	17	115	1.1	0.2	0.95	31	ABS 0.0	515	41	276	0	DWR
						2.44	3.07	3.83	0.03	0.00	5.83	0.35	3.24	0.02	0.01								
domestic	2N/2W-36E2	6-9-61		1820	8.0	136	98	114	1.7	0	609	62	291	13	0.3	0.64	25	ABS 0.0	1040	25	743	244	DWR
						6.79	8.03	4.96	0.04	0.00	9.98	1.29	8.21	0.21	0.02								
J. D. Nailen domestic	2N/2W-36J1	6-9-61		1050	8.3	61	39	108	0.6	0	314	91	116	33	0.3	0.48	32	ABS 0.0	635	43	312	55	DWR
						3.04	3.19	4.70	0.02	0.00	5.15	1.89	3.27	0.53	0.02								
A. Sebastiani domestic	1N/1W-7K1	6-9-61		2120	8.1	96	70	278	1.3	0	370	479	239	12	0.5	0.92	24	ABS 0.0	1380	53	526	223	JHR
						4.79	3.72	12.09	0.03	0.00	6.06	9.97	6.74	0.19	0.03								
Laudis domestic	1N/1W-29G1	6-9-61		1790	8.0	74	66	220	0.9	0	372	227	267	20	0.9	0.92	21	ABS 0.0	1080	51	457	152	DWR
						3.69	5.44	9.37	0.02	0.00	6.10	4.73	7.53	0.32	0.03								
C. Hook irrigation	1N/2W-11N1	6-12-61		1140	7.7	89	26	127	2.5	0	494	25	121	0.6	0.6	1.2	42	ABS 0.0	678	45	330	0	DWR
						4.44	2.13	3.52	0.06	0.00	8.10	0.52	3.41	0.01	0.03								
J. E. Walls domestic	1N/2W-13P1	6-12-61		1480	8.2	103	71	127	0.5	0	611	114	126	41	0.5	2.3	30	ABS 0.0	915	33	550	49	DWR
						5.14	5.85	5.52	0.01	0.00	10.01	2.37	3.55	0.66	0.03								

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{1}{100}$ except as shown, and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						equivalents per million												Total ppm	N.C. ppm			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)						Boron (B)	Silica (SiO ₂)
	<u>MDB&M</u>																					
F. H. Dunham domestic	2N/2W-27R1	6-9-61		1670	8.5	51 2.54	43 3.51	266 11.57	3.5 0.09	1.0 0.33	503 8.24	95 1.98	248 6.99	1.5 0.02	0.3 0.02	5.8	41	ABS 0.0	1010	65	303 0	DWR
A. Buscaglia domestic	2N/2W-36E1	6-9-61		3240	7.5	232 11.58	156 12.80	274 11.92	0.7 0.02	0 0.00	573 9.39	438 9.12	563 15.88	110 1.77	0.5 0.03	2.2	34	ABS 0.0	2090	33	1220 750	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ^{as} except as shown, and Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Barium (Ba)			Silica (SiO ₂)	Other constituents		Total	N.C.
																					ppm	ppm
	MDM&M					EAST BAY AREA OF SANTA CLARA VALLEY (Cont.)																
Todd Shipyard	2S/4W-3F1	6-2-61	67	738															ABS 0.0	DWR		
Alameda High School domestic	2S/4W-12R1	6-2-61	66	384															ABS 0.0	DWR		
Ratto	2S/4W-25A1	6-2-61		836															ABS 0.0	DWR		
Bayside Nursery irrigation	3S/2W-7J1	6-2-61	65	1140															ABS 0.0	DWR		
Kruger and Sons industrial	3S/2W-19R4	6-6-61	64	1120															ABS 0.0	DWR		
A. Mateas irrigation	3S/2W-30R14	6-6-61		1280															ABS 0.0	DWR		
G. Stroh irrigation	3S/2W-31H1	6-6-61	68	582															ABS 0.0	DWR		
Luman Estates irrigation	3S/2W-31K1	6-6-61	69	710															ABS 0.0	DWR		
Mt. Eden Nursery domestic & irrigation	3S/2W-32D	6-6-61	74	792															ABS 0.0	DWR		
Avansimo Mortensen Co. irrigation	3S/3W-1G3	6-2-61	75	1040															ABS 0.0	DWR		
A. H. Breed irrigation	3S/3W-3J2	6-6-61	67	728															ABS 0.0	DWR		
Trojan Powder industrial	3S/3W-11Q1	6-5-61		1460															ABS 0.0	DWR		
Glennelli irrigation	3S/3W-13B2	6-2-61	63	1910															ABS 0.0	DWR		
Greenwood Corp. domestic & irrigation	3W/3W-2AJ1	6-6-61		734															ABS 0.0	DWR		

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Constituents (P.C.C.),

Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.2 except as shown, Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per cent sodium	Hardness as CaCO ₃		Analyzed by c																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)			Ni-trate (NO ₃)	Fluo-ride (F)		Boron (B)	Silica (SiO ₂)	Other constituents	Total ppm	N.C. ppm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
J. Harat domestic and stock Citizens Utility Co. municipal	3S/3W-24Q2	6-6-61		1880	7.6																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																

a. Determined by addition of constituent.
b. Gravimetric determination.
c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ppm. Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^a	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c					
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)			Fluo-ride (F)	Boron (B)		Silica (SiO ₂)	Other constituents ^d	Total ppm	N.C. ppm	
H. J. Kaiser Ind.	4S/1W-21M1	9-5-61	64	656	7.5	EAST BAY AREA OF SANTA CLARA VALLEY (2-9) (Cont.)								0.56	17	398	25	267	73	DWR			
						60 2.99	28 2.34	41 1.78	1.7 0.04	0 0.00	236 3.87	80 1.66	52 1.47								1.8 0.03	0.3 0.02	
DeSalle domestic & irrigation	4S/1W-21R2	12-7-61	53	690	7.9	62 3.09	27 2.24	40 1.74	1.8 0.05	0 0.00	239 3.92	81 1.69	54 1.52	1.9 0.03	0.2 0.01	0.69	18	Fe 0.03 (Total) Al 0.00 As 0.00 Cr 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.01 Se 0.00 T.O. <1.4 Phenol 0.000 ABS 0.0	404	24	267	71	DWR
						49 2.44	26 2.12	76 3.31	1.9 0.20	0 0.00	341 5.59	64 1.33	33 0.93	8.0 0.13	0.3 0.02	1.5							
A. J. Rezendes irrigation	4S/1W-22M2	5-11-61	1420	784	8.2	18 0.90	19 1.58	320 13.92	5.4 0.14	0 0.00	848 13.90	33 0.69	66 1.86	4.0 0.06	0.4 0.02	5.5	30	Fe 2.3 (Total) Al 0.00 As 0.00 Cu 0.05 Pb 0.01 Mn 1.2 Zn 0.03 ABS 0.0	918	84	124	0	DWR
						537 26.80	262 21.55	121 5.26	4.4 0.11	0 0.00	244 4.00	77 1.60	1670 47.09	5.0 0.08	0.2 0.01	0.52							
M. DeSalle domestic	4S/1W-28D7	11-7-61	5280	7.5	7.5	537 26.80	262 21.55	121 5.26	4.4 0.11	0 0.00	244 4.00	77 1.60	1670 47.09	5.0 0.08	0.2 0.01	0.52	18	Fe 0.60 (Total) Al 0.06 As 0.00 Cu 0.00 Pb 0.01 Mn 0.00 Zn 0.06 ABS 0.0	2820	10	2420	2220	DWR
A. Rodriguez domestic & irrigation	4S/1W-28E3	5-10-61	5430										1750 49.35				ABS 0.0					DWR	
A. C. Bettencourt domestic	4S/1W-29B2	5-11-61	2900										794 22.39				ABS 0.0					DWR	
Rodriguez irrigation	4S/1W-29M6	5-10-61	5380										1780 50.20				ABS 0.0					DWR	
J. Silva	4S/1W-30C2	5-10-61	3870										1170 32.99				ABS 0.0					DWR	
		9-26-61	4840	7.6	7.6	531 26.50	212 17.46	135 5.87	4.8 0.12	0 0.00	360 5.90	221 4.60	1350 38.07	17 0.27	0.3 0.02	0.50	17	Fe 0.70 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 1.2 ABS 0.0	2660	12	2200	1900	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Monogonase (Mn), Zinc (Zn), reported here as ^{0.0}/_{0.00} except as shown, Selenium (Se), and Odor (T.O.). Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^a	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c														
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)			Ni-tro-ate (NO ₃)	Fluo-ride (F)		Boran (B)	Silica (SiO ₂)	Total ppm	N.C. ppm										
Cloverdale Creamery Industrial	4S/1W-30G1	5-10-61		920	8.0	104	37	42	2.1	0	196	58	196	4.2	0.2	0.37	24	ABS 0.0 Fe 0.21 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.41	564	18	414	253	DWR									
						5.19	3.08	1.83	0.05	0.00	3.21	1.21	5.53	0.07	0.01																	
W. E. Hutchins irrigation	4S/1W-31A2	5-17-61		745	8.0	65	21	68	1.8	0	269	45	87	1.5	0.2	0.38	22	ABS 0.0 Fe 0.05 (Total) Al 0.05 As 0.00 Cu 0.00 Pb 0.01 Mn 0.15 Zn 0.28	444	37	247	27	DWR									
						3.24	1.70	2.96	0.05	0.00	4.41	0.94	2.45	0.02	0.01																	
Alameda County Water District municipal	4S/1W-31B3	9-19-61		823	8.2	75	19	62	1.6	0	237	51	111	2.5	0.2	0.40	24	ABS 0.0 Fe 0.00 (Total) Al 0.00 As 0.00 Cu 0.01 Pb 0.00 Mn 0.07 Zn 0.01	463	34	266	72	DWR									
						3.74	1.57	2.70	0.04	0.00	3.88	1.06	3.13	0.04	0.01																	
F. Beschart domestic & irrigation	4S/1W-32A5	5-10-61		2350	7.7	382	130	108	4.0	0	435	69	887	25	0.2	0.56	23	ABS 0.0 Fe 0.03 (Total) Al 0.02 As 0.00 Cu 0.01 Pb 0.00 Mn 0.00 Zn 0.26	1840	14	1490	1130	DWR									
						19.06	10.71	4.70	0.10	0.00	7.13	1.44	25.01	0.40	0.01																	
Enrico and Sodini irrigation	4S/1W-33C3	5-10-61		1370	7.7	137	62	141	3.3	0	634	84	187	33	0.2	1.0	22	ABS 0.0 Fe 0.01 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.02	982	34	599	79	DWR									
						6.84	5.13	6.13	0.08	0.00	10.39	1.75	5.27	0.53	0.01																	
B. Rose domestic	4S/1W-34Q4	11-8-61		1530	7.7	149	49	98	2.4	0	453	44	220	65	0.2	0.27	26	ABS 0.0 Fe 0.01 (Total) Al 0.08 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.57	877	27	575	204	DWR									
						7.44	4.05	4.26	0.06	0.00	7.42	0.92	6.20	1.05	0.01																	
Alameda County Water District municipal	4S/1W-35P3	5-8-61		652	8.1	28	18	97	1.7	0	342	18	39	0.3	0.2	0.33	25	ABS 0.0 Fe 0.10 (Total) Al 0.01 As 0.00 Cu 0.01 Pb 0.00 Mn 0.00 Zn 0.03	396	59	143	DWR										
						1.40	1.46	4.22	0.04	0.00	5.60	0.37	1.10	0.00	0.01																	
Andrada domestic & irrigation	4S/2W-3R1	5-11-61		586								26	0.73				ABS 0.0					DWR										

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch, (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as mg/l, except as shown, Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c					
						equivalents per million										Total ppm	N.C. ppm						
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)						Ni-trate (NO ₃)	Fluo-ride (F)	Boron (B)	Silica (SiO ₂)	Other constituents
Andrada	4S/2W-3R1	9-26-61		593	8.4	40 2.00	11 0.90	78 3.39	2.1 0.05	4 0.13	294 4.82	41 0.85	20 0.56	0.2 0.00	0.4 0.02	0.41	24	Fe 0.10 (Total) Al 0.00 As 0.00 Cu 0.02 Pb 0.00 Mn 1.6 Zn 0.44 ABS 0.0	365	53	145	0	DWR
City of Hayward municipal	4S/2W-5A14	6-7-61	68	862																			DWR
J. F. Bettencourt irrigation	4S/2W-9Q2	6-6-61	68	4710																			DWR
Holly Sugar industrial	4S/2W-10C1	5-17-61		555																			DWR
		9-26-61		708	8.0	30 1.50	14 1.14	94 4.09	2.3 0.06	0 0.00	188 3.08	43 0.90	98 2.76	0.7 0.01	0.1 0.00	0.40	22	Fe 0.05 (Total) Al 0.01 As 0.00 Cu 0.00 Pb 0.00 Mn 0.14 Zn 0.05 ABS 0.0	396	60	132	0	DWR
Scutto Brothers domestic & irrigation	4S/2W-10Q2	5-10-61		2410																			DWR
		9-19-61			8.0	294 14.67	150 12.30	122 5.31	3.5 0.09	0 0.00	484 7.93	361 7.52	583 16.44	12 0.19	0.2 0.01	0.84	23	Fe 0.05 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.02 Mn 0.01 Zn 1.8 ABS 0.0	1790	16	1350	953	DWR
H. Andrade domestic & irrigation	4S/2W-10Q3	5-17-61		2060																			DWR
		9-26-61		2290	7.7	200 9.98	134 11.00	101 4.39	3.2 0.08	0 0.00	349 5.72	360 7.50	411 11.59	24 0.39	0.1 0.00	0.87	22	Fe 0.03 (Total) Al 0.03 As 0.00 Cu 0.04 Pb 0.01 Mn 0.00 Zn 0.04 ABS 0.0	428	17	1050	764	DWR
H. Dutra domestic & irrigation	4S/2W-11Q5	5-10-61		1470																			DWR
		9-26-61		1480	7.8	140 6.99	58 4.76	94 4.09	1.7 0.04	0 0.00	445 7.29	112 2.33	116 3.27	189 3.05	0.4 0.02	0.33	21	Fe 0.57 (Total) Al 0.00 As 0.00 Cu 0.05 Pb 0.04 Mn 0.00 Zn 5.0 ABS 0.0	951	26	588	223	DWR
C. Cosso irrigation	4S/2W-13E2	11-9-61		3600	8.0	312 15.57	175 14.40	156 6.79	4.3 0.11	0 0.00	220 3.60	270 5.62	947 26.70	20 0.32	0.3 0.02	0.42	8.6	Fe 0.88 (Total) Al 0.02 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.04 ABS 0.0	2000	18	1500	1320	DWR
T. E. Harvey irrigation	4S/2W-14E1	11-9-61		4410	7.3	430 21.46	203 16.70	210 9.14	4.0 0.10	0 0.00	376 6.16	387 8.06	1140 32.15	30 0.48	0.2 0.01	0.40	20	Fe 0.05 (Total) Al 0.03 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.49 ABS 0.0	2610	19	1910	1600	DWR
A. Caeton domestic & irrigation	4S/2W-14J1	5-10-61		624																			DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{0.00}$ except as shown, Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c
						equivalents per million												Total ppm	N.C. ppm	
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)					
A. Caeton	4S/2W-14J1	9-26-61	744	8.0	84 4.19	16 1.32	37 1.61	2.2 0.06	0 0.00	266 4.36	61 1.27	49 1.38	0.2 0.01	0.45	22	Fe 0.00 (Total) Al 0.02 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.01			58	DWR
																ABS 0.0				
F. P. Harvey domestic & irrigation	4S/2W-15C1	5-11-61	568	8.0	64 3.19	20 1.65	38 1.65	2.0 0.05	0 0.00	287 4.70	42 0.87	28 0.79	0.2 0.01	0.32	25	Fe 0.08 (Total) Al 0.01 As 0.00 Cu 0.00 Pb 0.00 Mn 0.10 Zn 0.02			7	DWR
																ABS 0.0				
King	4S/2W-15L4	5-10-61	656	8.2	68 3.39	19 1.57	34 1.48	2.6 0.07	0 0.00	265 4.34	53 1.10	36 1.02	0.2 0.01	0.39	24	Fe 0.01 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.04			31	DWR
																ABS 0.0				
Patterson irrigation	4S/2W-23F2	5-17-61	499	8.2	55 2.74	22 1.82	31 1.35	1.9 0.05	0 0.00	220 3.60	52 1.08	43 1.21	0.1 0.00	0.35	22	Fe 0.02 (Total) Al 0.02 As 0.00 Cu 0.00 Pb 0.01 Mn 0.00 Zn 0.03			48	DWR
																ABS 0.0				
L. Croce irrigation	4S/2W-24D4	5-18-61	578	8.1	68 3.39	20 1.61	32 1.39	1.9 0.05	0 0.00	272 4.46	49 1.02	29 0.82	0.2 0.01	0.37	21	Fe 0.08 (Total) Al 0.00 As 0.01 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.12			27	DWR
																ABS 0.0				
L. S. Amaral irrigation	4S/2W-24F6	11-9-61	2490	7.1	236 11.78	117 9.60	79 3.44	3.3 0.08	0 0.00	296 4.85	70 1.46	632 17.82	0.2 0.01	0.30	18	Fe 1.7 (Total) Al 0.40 As 0.00 Cu 0.01 Pb 0.01 Mn 0.00 Zn 0.02			827	DWR
																ABS 0.0				
J. A., J. R., and L. A. Macsdo irrigation	4S/2W-24J1	5-22-61	619	8.1	67 3.34	20 1.67	37 1.61	2.0 0.05	0 0.00	250 4.10	48 1.00	53 1.49	0.2 0.01	0.41	21	Fe 0.96 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.08 Zn 0.00			46	DWR
																ABS 0.0				
M. Kitani domestic & irrigation	4S/2W-24L5	5-11-61	601	8.1	67 3.34	20 1.67	37 1.61	2.0 0.05	0 0.00	250 4.10	48 1.00	53 1.49	0.2 0.01	0.41	21	Fe 0.96 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.08 Zn 0.00			46	DWR
																ABS 0.0				

^a Determined by addition of constituents.

^b Gravimetric determination.

^c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

^d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{100}$ except as shown, Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhas at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c					
						equivalents per million										Total ppm	N.C. ppm						
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)						Fluo- ride (F)	Boran (B)	Silico (SiO ₂)	Other constituents ^d	
M. Kirani domestic	4S/2W-24L6	9-25-61		606	8.1	EAST BAY AREA OF SANTA CLARA VALLEY (2-9) (Cont.)								367	20	256	36	DWR					
W. D. Patterson irrigation	4S/2W-26A1	5-10-61		820	8.2													DWR					
J. L. and E. A. Abbau stock and irrigation	4S/2W-26J1	11-8-61		1570	8.2													DWR					
H. H. and W. D. Patterson domestic and irrigation	4S/2W-27L1	5-10-61		614	8.2													DWR					
E. Malani industrial	4S/2W-35L2	11-8-61		817	7.9													DWR					
J. F. Trinidad domestic & irrigation	5S/1W-6D1	11-8-61		1620	7.7													DWR					
Malani domestic & irrigation	5S/1W-6G1	5-10-61		1560														DWR					
A. F. Brosius domestic & irrigation	5S/1W-9K1	5-11-61		801														DWR					

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{100}{600}$ except as shown, Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Polysulfate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)			Nitrate (NO ₃)	Fluoride (F)		Boron (B)	Silica (SiO ₂)	Other constituents																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
A. F. Brosius domestic & irrigation	5S/1W-9K1	9-19-61		806	8.1	EAST BAY AREA OF SANTA CLARA VALLEY (2-9) (Cont.)								457	36	270	0	DWR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{0.00}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
SOUTH BAY AREA OF SANTA CLARA VALLEY (2-9) (Cont.)																							
Winsor Brothers	6S/1E-7C1	8-29-61	66	575	8.4	36 1.80	13 1.06	75 3.26	1.0 0.02	4 0.13	45 0.94	22 0.62	0.9 0.01	0.2 0.01	0.22	20	350	53		DWR			
V. Cortese irrigation	6S/1E-21C1	8-29-61		804	8.3	63 3.14	24 2.01	79 3.44	2.4 0.06	0 0.00	43 0.90	44 1.24	31 0.50	0.3 0.02	0.34	27	491	40	258	0	DWR		
Machado Estates domestic and irrigation	6S/1E-30H1	8-29-61		582	8.4	66 3.29	20 1.69	30 1.30	1.4 0.04	3 0.10	41 0.85	25 0.70	6.5 0.10	0.2 0.01	0.14	28	357	20	249	18	DWR		
J. S. Garcia domestic and irrigation	6S/1W-11B1	8-30-61	69	536	7.9	49 2.44	19 1.58	35 1.52	1.4 0.04	0 0.00	41 0.85	24 0.68	0.3 0.00	0.1 0.00	0.16	26	320	27	201	0	DWR		
Collier Carbon and Chemical Corporation Industrial	6S/1W-16A1	9-13-61	72	2520	8.1	183 9.13	85 7.03	216 9.40	2.1 0.05	0 0.00	139 2.89	647 18.24	1.2 0.02	0.3 0.02	0.31	20	1420	37	809	599	DWR		
A. French domestic and irrigation	6S/1W-14B1	8-29-61	72	520	8.4	53 2.64	13 1.04	40 1.74	1.3 0.03	4 0.13	40 0.83	25 0.70	0.5 0.01	0.2 0.01	0.14	26	315	32	184	0	DWR		
S. Ikegami irrigation	6S/1W-19Q1	8-29-61	69	515	8.4	50 2.30	15 1.26	40 1.74	1.0 0.02	6 0.20	30 0.62	22 0.62	1.4 0.02	0.2 0.01	0.21	24	310	32	188	0	DWR		
S. Weston irrigation	6S/1W-28R1	8-22-61	70	463	8.0	46 2.30	15 1.26	27 1.17	1.2 0.03	0 0.00	45 0.94	15 0.42	4.0 0.06	0.1 0.00	0.16	31	287	24	178	7	DWR		
G. H. Fukumoto irrigation	6S/1W-29C1	8-29-61		520	8.1	50 2.50	16 1.34	36 1.57	1.1 0.03	0 0.00	26 0.54	21 0.59	2.0 0.03	0.1 0.00	0.26	26	308	29	192	0	DWR		
Resantes domestic	6S/2W-9H1	8-25-61		500	8.0	41 2.04	8.5 0.70	60 2.61	1.9 0.05	0 0.00	14 0.29	19 0.54	1.0 0.02	0.2 0.01	0.23	21	302	48	137	0	DWR		
J. Joaquin	6S/2W-9K2	8-23-61	74	559	8.4	28 1.40	12 1.00	78 3.39	1.1 0.03	4 0.13	20 0.42	40 1.13	0.1 0.00	0.1 0.00	0.17	32	340	58	120	0	DWR		
City of Palo Alto municipal	6S/2W-17D4	8-31-61	71	691	8.5	50 2.50	17 1.42	77 3.35	1.1 0.03	10 0.33	42 0.87	54 1.52	2.1 0.03	0.4 0.02	0.17	34	422	46	196	0	DWR		
California Water Ser. municipal	6S/2W-20N1	8-30-61		530	8.0	35 1.75	24 1.95	40 1.74	1.1 0.03	0 0.00	19 0.40	33 0.93	1.3 0.21	0.0 0.00	0.14	35	319	32	185	0	DWR		
Horn Brothers	6S/2W-24K3	8-29-61		500	8.3	39 1.95	17 1.37	44 1.91	1.0 0.02	0 0.00	30 0.62	20 0.56	0.4 0.01	0.2 0.01	0.22	33	310	36	166	0	DWR		
Blonaker domestic and irrigation	6S/2W-29D2	8-30-61	68	768	8.1	74 3.69	28 2.34	49 2.13	1.3 0.03	0 0.00	19 0.40	42 1.18	4.4 0.71	0.1 0.00	0.21	32	464	26	302	12	DWR		

a. Determined by addition of constituents.

b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^a	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
	<u>MDB6M</u>					<u>SOUTH BAY AREA OF SANTA CLARA VALLEY (2-9) (Cont.,)</u>																	
H. Mantelli domestic and irrigation	6S/2W-34M1	8-30-61	68	531	8.1	55 2.74	23 1.88	22 0.96	1.0 0.02	0 0.00	265 4.34	16 0.33	24 0.68	19 0.31	0.1 0.00	0.13	29		319	17	231	14	DWR
O. P. Gluhalch irrigation	6S/2W-36H2	8-24-61	70	556	7.9	43 2.14	24 1.96	32 1.39	1.5 0.04	0 0.00	173 2.84	44 0.92	51 1.44	19 0.31	0.1 0.00	0.30	26		326	25	205	63	DWR
City of Palo Alto municipal	6S/3W-1B1	8-31-61	72	1140	8.2	59 2.94	18 1.46	150 6.52	1.8 0.05	0 0.00	233 3.82	50 1.04	218 6.15	3.6 0.06	0.2 0.01	0.32	32		647	59	220	29	DWR
City of Palo Alto municipal	6S/3W-2D1	8-31-61	70	756	8.4	76 3.79	18 1.50	60 2.61	1.7 0.04	4 0.13	286 4.69	58 1.21	58 1.64	11 0.18	0.4 0.02	0.22	24		451	33	265	24	DWR
City of Palo Alto municipal	6S/3W-12C1	8-31-61	74	644	8.5	40 2.00	8.5 0.70	88 3.83	1.5 0.04	6 0.20	249 4.08	33 0.69	53 1.49	1.2 0.02	0.5 0.03	0.17	35		390	58	135	0	DWR
W. S. Bennet	7S/1W-5P1	8-29-61		656	8.3	74 3.69	29 2.42	30 1.30	1.3 0.03	0 0.00	319 5.23	48 1.00	29 0.82	12 0.19	0.2 0.01	0.31	22		403	17	306	44	DWR
						<u>LIVERMORE VALLEY (2-10)</u>																	
T. P. Bishop Co. irrigation	2S/1W-22A1	5-31-61		974									178 5.02					ABS 0.0					DWR
F. Guetanich domestic	2S/2E-35C2	5-31-61		2650									634 17.88					ABS 0.0					DWR
Volk-McLain Co. domestic	3S/1W-1B1	3-1-61		794	8.0	49 2.45	17 1.43	109 4.74	0.6 0.02	0 0.00	382 6.26	22 0.46	62 1.75	0.1 0.00	0.2 0.01	0.3	23		471	55	194	0	DWR
E. D. and J. Nevin domestic	3S/1W-1G1	5-31-61		1060									84 2.37					ABS 0.0					DWR
	3S/1W-3Q1	5-31-61		1290									136 3.84					ABS 0.0					DWR
U. S. Government observation	3S/1E-6M1	2-7-61		7040	8.0	264 13.17	178 14.63	1240 53.94	2.2 0.06	0 0.00	1090 17.87	2040 42.47	860 24.25	0.9 0.01	1.0 0.05	5.0	19		5150	66	1390	496	DWR
State of California observation	3S/1E-6N1	4-20-61		37200	7.7	1170 58.38	2060 169.62	5940 258.39	19 0.49	0 0.00	720 11.86	5050 105.14	13300 375.06			13.0	12		27900	53	11400	10800	DWR
State of California observation	3S/1E-6P1	4-20-61		40600	7.4	1030 51.40	1460 119.80	8020 348.87	13 0.33	0 0.00	697 11.42	6700 139.49	13400 377.88			20.0	14		31000	67	8560	7990	DWR
State of California observation	3S/1E-7C1	4-20-61		35100	7.7	960 47.90	1590 130.90	6390 277.96	7.9 0.20	0 0.00	576 9.44	5750 119.72	11600 327.12			19.0	11		26600	61	8940	8470	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
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						equivalents per million												Silico (SiO ₂)	Other constituents ^d		Total ppm	N.C. ppm	
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)								Baron (B)
						LIVERMORE VALLEY (2-10) (Cont.)																	
Volk-McLain Co. observation	3S/1E-7E3	1-24-61		7940	7.7	641 31.99	362 29.81	940 40.89	4.3 0.11	0 0.00	1170 19.18	2030 42.26	1380 38.92	1.1 0.02	1.2 0.06	4.7	22	Fe 0.01 (Dis.) PO ₄ 0.35		5960	40	3090 2130	DWR
Volk-McLain Co. observation	3S/1E-7E4	2-7-61		18100	8.0	538 26.85	943 77.55	3440 149.64	3.4 0.09	0 0.00	1450 23.77	8500 176.97	1780 50.20	1.7 0.03	2.0 0.11	18.0	17	Fe 0.00 (Dis.) PO ₄ 0.05 ABS 0.0		16000	59	5220 4030	DWR
U. S. Air Force domestic and irrigation	3S/1E-8H3	6-1-61		744									64 1.80					ABS 0.0					DWR
G. Hagemann domestic and irrigation	3S/1E-11H1	6-1-61		639									38 1.07					ABS 0.0					DWR
E. Hagemann none	3S/1E-11H3	4-10-61		1640	8.0	99 4.94	110 9.06	73 3.18	2.0 0.05	0 0.00	500 8.20	58 1.21	270 7.61	18 0.29	0.0 0.00	0.9	30	Fe 0.0 (Dis.) Al 0.17 Cu 0.01 Mn 0.00 Pb 0.00 Zn 0.00 Cr 0.00 PO ₄ 0.20		907	18	700 290	DWR
A. H. Hagemann domestic and irrigation	3S/1E-12C1	4-11-61		1070	8.2	65 3.24	62 5.08	67 2.91	1.7 0.04	0 0.00	392 6.42	47 0.98	127 3.58	25 0.40	0.0 0.00	0.9	30	Fe 0.00 (Dis.) Cu 0.00 Mn 0.00 Pb 0.00 Zn 0.00 Cr 0.01 As 0.00 PO ₄ 0.15 Al 0.07		619	26	416 95	DWR
A. H. Hagemann none	3S/1E-12C2	4-11-61		1910	8.0	54 2.69	74 6.07	250 10.88	1.0 0.03	0 0.00	644 10.56	136 2.83	250 7.05	2.6 0.04	0.0 0.00	4.0	23	Fe 0.00 (Dis.) Cu 0.12 Mn 0.00 Pb 0.00 Zn 0.27 Cr 0.00 As 0.05 PO ₄ 0.05 Al 0.12		1100	55	438 0	DWR
E. Hagemann stock	3S/1E-12D1	4-19-61		1640	7.9	95 4.74	96 7.86	114 4.96	2.4 0.06	0 0.00	574 9.41	66 1.37	248 6.99	21 0.34	0.0 0.00	1.5	25	Fe 0.00 (Dis.) Cu 0.05 Mn 0.01 Pb 0.00 Zn 1.4 Cr 0.00 As 0.00 PO ₄ 0.00 Al 0.16		953	28	630 159	DWR
City of Livermore domestic and irrigation	3S/1E-12H1	4-19-61		915	8.0	61 3.04	70 5.72	37 1.61	1.6 0.04	0 0.00	444 7.28	37 0.77	77 2.17	19 0.31	0.0 0.00	0.3	29	Fe 0.00 (Dis.) Cu 0.01 Mn 0.00 Pb 0.00 Zn 0.04 Cr 0.02 As 0.00 PO ₄ 0.15 Al 0.09		551	15	438 74	DWR
Calif. Rock and Gravel domestic	3S/1E-13P2	5-31-61		581									45 1.27					ABS 0.0					DWR
H. J. Kaiser Ind. domestic	3S/1E-15L1	6-1-61		526									29 0.82					ABS 0.0					DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

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						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)			Baron (B)	Silica (SiO ₂)		Other constituents	Total ppm
H. J. Kaiser Ind. domestic	3S/1E-16N1	6-19-61		682				LIVERMORE VALLEY (2-100) (Cont.)														DWR
	3S/1E-16P1	6-19-61		498									35 0.99								DWR	
	3S/1E-17D1	7-28-61		828									38 1.07		0.84				139		DWR	
	3S/1E-17D2	7-28-61		521											0.30			204		DWR		
	3S/1E-17H2	6-1-61		815									65 1.83								DWR	
H. Kruse Irrigation	3S/1E-18A1	7-28-61		1040											0.83			366		DWR		
	3S/1E-19A5	6-19-61		824									55 1.55								DWR	
	3S/1E-29A1	4-19-61		691	7.6	36 1.80	20 1.64	83 3.61	0.8 0.02	0 0.00	286 4.64	17 0.35	74 2.09	9.4 0.15	0.2 0.01	0.3		412	51	173	0	DWR
Castlewood Corporation none	3S/1E-29E3	5-22-61	64	1620	7.4	107 5.34	39 3.18	192 8.35	2.5 0.06	0 0.00	500 8.20	54 1.12	255 7.19	1.5 0.02	0.2 0.01	5.2	29	931	49	426	16	DWR
	3S/1E-29N1	4-12-61		3170	7.8	122 6.09	49 4.01	430 18.70	17 0.43	0 0.00	338 5.54	1.0 0.02	870 24.53	1.5 0.02	0.4 0.02	24.0	24	1710	64	505	228	DWR
Castlewood Country Club observation	3S/1E-32B1	1-24-61		8960	7.3	262 13.07	106 8.73	1390 60.46	33 0.84	0 0.00	268 4.39	11 0.23	2850 80.37	2.2 0.04	0.4 0.02	81.0	40	4910	73	1090	870	DWR
	3S/1E-32K2	4-3-61	61	1830	8.0	93 4.64	45 3.68	222 9.66	0.8 0.02	0 0.00	374 6.13	61 1.27	380 10.72	1.1 0.02	0.4 0.02	17.0	24	1030	54	416	109	DWR
Cohen stock and irrigation																						
	3S/1E-32K4	4-3-61	60	2830	7.9					0 0.00	486 7.97		610 17.20					775		376		DWR
H. Turner observation		4-4-61	60	2840	7.8	186 9.28	73 6.02	308 13.40	6.0 0.15	0 0.00	512 8.39	176 3.66	610 17.20	1.1 0.02	0.2 0.01	2.5	47	1680	46	765	345	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL) or State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
						LIVERMORE VALLEY (2-10) (Cont.)																	
Ball domestic	3S/2E-6N1	5-8-61		672	7.8	$\frac{43}{2.15}$	$\frac{44}{3.65}$	$\frac{35}{1.52}$	$\frac{1.4}{0.04}$	$\frac{0}{0.00}$	$\frac{288}{4.72}$	$\frac{35}{0.73}$	$\frac{42}{1.18}$	$\frac{30}{0.48}$	$\frac{0.1}{0.01}$	$\frac{0.3}{0.15}$	$\frac{31}{0.15}$	Fe 0.00 (Dise.) PO ₄ 0.15	404	21	290	54	DWR
H. R. Johnson none	3S/2E-7C1	5-8-61		1640	7.8	$\frac{84}{4.19}$	$\frac{100}{8.21}$	$\frac{118}{5.05}$	$\frac{3.0}{0.08}$	$\frac{0}{0.00}$	$\frac{608}{9.97}$	$\frac{47}{0.98}$	$\frac{210}{5.92}$	$\frac{11}{0.18}$	$\frac{0.0}{0.00}$	$\frac{1.0}{0.00}$	$\frac{28}{0.10}$	Fe 0.00 (Dise.) PO ₄ 0.10	900	29	620	121	DWR
H. L. Hagemann domestic and irrigation	3S/2E-7K1	5-31-61		761										$\frac{50}{1.41}$			ABS 0.0					DWR	
Calif. Water Service municipal	3S/2E-8H1	5-31-61		724									$\frac{46}{1.30}$				ABS 0.0					DWR	
Coast Mfg. Company	3S/2E-10F2	4-13-61		881	8.2	$\frac{52}{2.59}$	$\frac{52}{4.29}$	$\frac{54}{2.35}$	$\frac{1.4}{0.04}$	$\frac{0}{0.00}$	$\frac{330}{5.41}$	$\frac{37}{0.77}$	$\frac{84}{2.37}$	$\frac{35}{0.56}$	$\frac{0.2}{0.01}$	$\frac{0.5}{0.25}$	$\frac{34}{0.25}$	Fe 0.00 (Dise.) PO ₄ 0.25	513	25	344	73	DWR
Amling Da Vore Nursery irrigation	3S/2E-10H1	5-31-61		794									$\frac{78}{2.20}$				ABS 0.0					DWR	
B. Wagoner irrigation	3S/2E-17N1	5-31-61		683									$\frac{69}{1.94}$				ABS 0.0					DWR	
B. G. Wood irrigation	3S/2E-29D1	5-31-61		741									$\frac{61}{1.72}$				ABS 0.0					DWR	
C. Crohare	3S/2E-29Q1	4-19-61		789	8.0	$\frac{68}{3.39}$	$\frac{36}{2.95}$	$\frac{54}{2.35}$	$\frac{1.8}{0.05}$	$\frac{0}{0.00}$	$\frac{319}{5.23}$	$\frac{103}{2.14}$	$\frac{45}{1.27}$	$\frac{0.0}{0.00}$	$\frac{0.2}{0.01}$	$\frac{0.8}{0.01}$	$\frac{14}{0.00}$	Fe 0.00 (Dise.) PO ₄ 0.00	480	27	316	54	DWR
J. Amaral domestic	3S/3E-19C1	5-31-61		1590									$\frac{224}{6.32}$				ABS 0.0					DWR	

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b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed By c				
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)			Ni-trate (NO ₃)	Fluo-ride (F)		Baran (B)	Silica (SiO ₂)	Other constituents ^d	Total ppm
F. T. Blake irrigation	MDBSM 12S/1E-11L1	5-4-61	415	8.0	30 1.50	20 1.64	19 0.83	1.6 0.04	0 0.00	1.77 2.90	21 0.44	19 0.54	6.8 0.11	0.3 0.02	0.10 0.02	48	Fe 0.00 (Total) Al 0.01 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.02	252	21	157	12	DMR
State of California domestic	12S/1E-11N1	5-4-61	411	8.1	29 1.45	23 1.89	21 0.91	1.6 0.04	0 0.00	1.68 2.75	28 0.58	23 0.65	1.3 0.21	0.3 0.02	0.11	44	Fe 0.02 (Total) Al 0.02 As 0.00 Cu 0.00 Pb 0.01 Mn 0.00 Zn 0.04	266	21	167	29	DMR
J. Rocha irrigation	12S/1E-14J1	5-4-61	469	8.1	22 1.10	19 1.56	24 1.04	1.4 0.04	0 0.00	1.22 2.00	18 0.37	32 0.90	28 0.45	0.1 0.00	0.06	38	Fe 0.05 (Total) Al 0.02 As 0.00 Cu 0.00 Pb 0.01 Mn 0.00 Zn 0.03	232	28	133	33	DMR
E. L. Padden domestic	12S/1E-23R1	5-4-61	599	8.1	28 1.40	28 2.34	47 2.04	1.2 0.31	0 0.00	2.71 4.44	43 0.90	35 0.99	0.5 0.01	0.2 0.01	0.08	30	Fe 1.4 (Total) Al 0.02 As 0.01 Cu 0.01 Pb 0.01 Mn 0.00 Zn 0.04	351	33	187	0	DMR
H. Trafton irrigation	12S/1E-24G1	5-4-61	538	8.1	40 2.00	29 2.38	27 1.17	3.5 0.09	0 0.00	2.65 4.34	32 0.67	23 0.65	1.1 0.02	0.2 0.01	0.13	32	Fe 0.64 (Total) Al 0.01 As 0.00 Cu 0.02 Pb 0.00 Mn 0.01 Zn 0.65	316	21	219	2	DMR
Geecon irrigation	12S/1E-24J2	5-4-61	2310	8.1	25 1.25	22 1.77	44 1.91	2.7 0.07	0 0.00	1.98 3.24	52 1.08	613 17.29	0.5 0.01	0.2 0.01	0.06	31	Fe 0.02 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.05 Zn 0.04	297	38	151	0	DMR
Morey irrigation	12S/1E-25B2	6-15-61	499	8.1	25 1.25	22 1.77	44 1.91	2.7 0.07	0 0.00	1.98 3.24	52 1.08	613 17.29	0.5 0.01	0.2 0.01	0.06	31	Fe 0.02 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.05 Zn 0.04	297	38	151	0	DMR

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QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

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						. equivalents per million												Silica (SiO ₂)	Fluoride (F)		Nitrate (NO ₃)	Chloride (Cl)	Sulfate (SO ₄)	Bicarbonate (HCO ₃)	Potassium (K)	Carbonate (CO ₃)	Sodium (Na)	Magnesium (Mg)	Calcium (Ca)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^a	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c			
						equivalents per million												Silica (SiO ₂)	Total				
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)				Boron (B)		N.C. ppm	ppm	
	<u>MD&M</u>							<u>PAJARO VALLEY (3-2) (Cont.)</u>															
Ranger domestic and irrigation	12S/2E-31A1	9-27-61		670	8.3	$\frac{50}{2.50}$	$\frac{38}{3.11}$	$\frac{40}{1.74}$	$\frac{2.4}{0.06}$	$\frac{0}{0.00}$	$\frac{285}{4.67}$	$\frac{73}{1.52}$	$\frac{45}{1.27}$	$\frac{0.3}{0.00}$	$\frac{0.2}{0.01}$	$\frac{0.19}{0.01}$	<u>33</u>	Fe 0.32 (Total) Al 0.00 As 0.00 Cu 0.01 Pb 0.00 Mn 0.00 Zn 0.09	422	23	281	47	DWR
Jensen irrigation	12S/2E-31C1	7-27-61	65	473	8.0	$\frac{23}{1.15}$	$\frac{16}{1.33}$	$\frac{42}{1.83}$	$\frac{1.8}{0.05}$	$\frac{0}{0.00}$	$\frac{76}{1.24}$	$\frac{16}{0.33}$	$\frac{70}{1.97}$	$\frac{42}{0.68}$	$\frac{0.2}{0.01}$	$\frac{0.08}{0.01}$	<u>43</u>	Fe 0.00 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.02	291	42	124	62	DWR
P. Tornavaca irrigation	12S/2E-31K1	7-27-61	68	1060	8.2	$\frac{92}{4.39}$	$\frac{40}{3.32}$	$\frac{62}{2.70}$	$\frac{3.7}{0.09}$	$\frac{0}{0.00}$	$\frac{222}{3.64}$	$\frac{68}{1.42}$	$\frac{187}{5.27}$	$\frac{11}{0.18}$	$\frac{0.2}{0.01}$	$\frac{0.26}{0.01}$	<u>42</u>	Fe 0.00 (Total) Al 0.00 As 0.01 Cu 0.00 Pb 0.00 Mn 0.03 Zn 0.02	615	25	396	214	DWR
S. H. Cowell irrigation	12S/2E-32C1	7-27-61		565	8.3	$\frac{44}{2.20}$	$\frac{28}{2.28}$	$\frac{34}{1.48}$	$\frac{2.7}{0.07}$	$\frac{0}{0.00}$	$\frac{219}{3.59}$	$\frac{51}{1.06}$	$\frac{43}{1.21}$	$\frac{2.3}{0.04}$	$\frac{0.2}{0.01}$	$\frac{0.15}{0.01}$	<u>37</u>	Fe 0.00 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.20	350	24	224	44	DWR
Johnson irrigation	12S/2E-32K1	6-15-61		574		$\frac{16}{0.80}$	$\frac{10}{0.84}$	$\frac{47}{2.04}$	$\frac{1.2}{0.03}$	$\frac{0}{0.00}$	$\frac{60}{0.98}$	$\frac{8.1}{0.17}$	$\frac{62}{1.75}$	$\frac{45}{0.72}$	$\frac{0.1}{0.00}$	$\frac{0.05}{0.00}$	<u>43</u>	Fe 0.03 (Total) Al 0.01 As 0.00 Cu 0.02 Pb 0.00 Mn 0.01 Zn 0.00 ABS 0.0	262	55	82	33	DWR
G. Hurley irrigation	12S/2E-32N1	7-27-61	79	628	8.0	$\frac{39}{1.95}$	$\frac{37}{3.01}$	$\frac{45}{1.96}$	$\frac{2.5}{0.06}$	$\frac{0}{0.00}$	$\frac{289}{4.74}$	$\frac{43}{0.90}$	$\frac{41}{1.16}$	$\frac{2.5}{0.04}$	$\frac{0.2}{0.01}$	$\frac{0.32}{0.01}$	<u>42</u>	Fe 0.10 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.07	394	28	248	11	DWR
L. Banouse irrigation	12S/3E-7B1	9-27-61	64	1270	8.1	$\frac{104}{5.19}$	$\frac{70}{5.78}$	$\frac{87}{3.78}$	$\frac{2.3}{0.06}$	$\frac{0}{0.00}$	$\frac{440}{7.21}$	$\frac{229}{4.77}$	$\frac{85}{2.40}$	$\frac{3.8}{0.06}$	$\frac{0.4}{0.02}$	$\frac{0.58}{0.02}$	<u>32</u>	Fe 0.07 (Total) Al 0.02 As 0.00 Cu 0.03 Pb 0.01 Mn 1.5 Zn 0.04	830	26	549	188	DWR
E. Hurley irrigation	13S/1E-1A1	9-27-61		1510	8.3	$\frac{95}{4.74}$	$\frac{73}{5.99}$	$\frac{97}{4.22}$	$\frac{4.4}{0.11}$	$\frac{0}{0.00}$	$\frac{219}{3.59}$	$\frac{82}{1.71}$	$\frac{328}{9.25}$	$\frac{13}{0.21}$	$\frac{0.2}{0.01}$	$\frac{0.23}{0.01}$	<u>39</u>	Fe 0.15 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.04 Zn 0.03	840	28	537	357	DWR
	13S/2E-5H1	7-26-61	64	1140	8.3	$\frac{87}{4.34}$	$\frac{48}{3.99}$	$\frac{90}{3.92}$	$\frac{3.8}{0.10}$	$\frac{0}{0.00}$	$\frac{295}{4.84}$	$\frac{175}{3.64}$	$\frac{107}{3.02}$	$\frac{44}{0.71}$	$\frac{0.2}{0.01}$	$\frac{0.33}{0.01}$	<u>41</u>	Fe 0.00 (Total) Al 0.00 As 0.01 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.01	741	32	417	175	DWR
G. Hurley irrigation	13S/2E-6E2	8-3-61	67	1260	8.3	$\frac{94}{4.69}$	$\frac{35}{2.84}$	$\frac{118}{5.13}$	$\frac{3.6}{0.09}$	$\frac{0}{0.00}$	$\frac{238}{3.90}$	$\frac{108}{2.25}$	$\frac{214}{6.03}$	$\frac{24}{0.39}$	$\frac{0.2}{0.01}$	$\frac{0.26}{0.01}$	<u>49</u>	Fe 0.00 (Total) Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.00	762	40	377	182	DWR

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b. Gravimetric determination.

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QUALITY OF GROUND WATERS IN CALIFORNIA
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1961

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents ^d		Total ppm	N.C. ppm
J. Stucki irrigation	MDR&M 13S/2E-6E3	7-27-61	65	1090	8.2	66 3.29	40 3.28	98 4.26	3.7 0.09	216 3.54	72 1.50	181 5.10	33 0.53	0.2 0.01	0.27	45	645	39	329	152	DWR	
						8.5 0.42	1.7 0.14	163 7.09	2.6 0.07	187 3.06	96 2.00	93 2.62	0.9 0.01	0.4 0.02	0.21	32	490	92	28	0	DWR	
						54 2.69	33 2.74	51 2.22	4.0 0.10	250 4.10	54 1.12	80 2.26	0.7 0.01	0.2 0.01	0.25	42	447	29	272	58	DWR	
F. Caparro and Sons domestic and irrigation	13S/2E-6P1	9-27-61	67	726	8.5	GILROY-HOLLISTER BASIN (3-3)										296	21	191	20	DWR		
Giberson irrigation	13S/2E-6R1	7-26-61	67	726	8.5	GILROY-HOLLISTER BASIN (3-3)										296	21	191	20	DWR		
T. Andrade irrigation	9S/3E-25N3	6-14-61	475	7.9	42 2.10	21 1.72	24 1.04	1.5 0.04	0 0.00	209 3.42	25 0.52	20 0.56	28 0.45	0.2 0.01	0.12	31	296	21	191	20	DWR	
					43 2.14	29 2.40	17 0.74	0.4 0.01	218 3.57	7.2 0.15	35 0.99	30 0.48	0.4 0.02	0.10	33	302	14	227	48	DWR		
					40 2.00	26 2.14	14 0.61	0.8 0.02	185 3.03	24 0.50	19 0.54	42 0.68	0.2 0.01	0.20	31	288	13	207	55	DWR		
P. L. Hudson irrigation	10S/3E-1E2	6-14-61	467	7.9	36 1.80	29 2.42	20 0.87	0.7 0.02	189 3.10	18 0.37	25 0.70	49 0.79	0.3 0.02	0.10	38	309	17	211	56	DWR		
					36 1.80	21 1.72	16 0.70	0.2 0.00	164 2.69	17 0.35	21 0.59	26 0.42	0.3 0.02	0.06	39	258	16	176	42	DWR		
					37 1.85	21 1.73	22 0.96	1.2 0.03	203 3.33	17 0.35	16 0.45	17 0.27	0.3 0.02	0.11	26	261	21	179	13	DWR		
E. H. Henderson domestic and irrigation	10S/3E-26J1	6-14-61	416	7.8	29 1.45	31 2.55	31 1.35	1.1 0.03	245 4.02	17 0.35	24 0.68	16 0.26	0.2 0.01	0.14	31	300	25	200	0	DWR		
					29 1.45	31 2.55	31 1.35	1.1 0.03	245 4.02	17 0.35	24 0.68	16 0.26	0.2 0.01	0.14	31	300	25	200	0	DWR		
					29 1.45	31 2.55	31 1.35	1.1 0.03	245 4.02	17 0.35	24 0.68	16 0.26	0.2 0.01	0.14	31	300	25	200	0	DWR		
W. Henzi domestic and irrigation	10S/4E-18J1	6-14-61	435	8.4	75 3.74	58 4.81	24 1.04	0.7 0.02	355 5.82	87 1.81	26 0.73	75 1.21	0.3 0.02	0.26	28	548	11	428	137	DWR		
					75 3.74	58 4.81	24 1.04	0.7 0.02	355 5.82	87 1.81	26 0.73	75 1.21	0.3 0.02	0.26	28	548	11	428	137	DWR		
					75 3.74	58 4.81	24 1.04	0.7 0.02	355 5.82	87 1.81	26 0.73	75 1.21	0.3 0.02	0.26	28	548	11	428	137	DWR		
D. Wolfe domestic and irrigation	10S/4E-28D2	6-14-61	511	7.5	42 2.10	21 1.76	14 0.61	0.8 0.02	191 3.13	34 0.71	11 0.31	11 0.18	0.2 0.01	0.15	24	256	14	193	30	DWR		
					42 2.10	21 1.76	14 0.61	0.8 0.02	191 3.13	34 0.71	11 0.31	11 0.18	0.2 0.01	0.15	24	256	14	193	30	DWR		
					42 2.10	21 1.76	14 0.61	0.8 0.02	191 3.13	34 0.71	11 0.31	11 0.18	0.2 0.01	0.15	24	256	14	193	30	DWR		
G. Hoeng irrigation	11S/4E-4Q3	6-14-61	851	8.1	63 3.14	32 2.65	24 1.04	1.3 0.03	280 4.59	50 1.04	21 0.59	45 0.72	0.2 0.01	0.20	30	405	15	290	60	DWR		
					63 3.14	32 2.65	24 1.04	1.3 0.03	280 4.59	50 1.04	21 0.59	45 0.72	0.2 0.01	0.20	30	405	15	290	60	DWR		
					63 3.14	32 2.65	24 1.04	1.3 0.03	280 4.59	50 1.04	21 0.59	45 0.72	0.2 0.01	0.20	30	405	15	290	60	DWR		
H. Herzman irrigation	11S/4E-8P2	6-14-61	417	8.4																DWR		
																					DWR	
J. D. Fair domestic	11S/4E-21R2	6-14-61	643	7.8																DWR		
																						DWR
																						DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), Detergent Surfactant (ABS).

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Determined by addition of constituents.

a. Determined by addition of constituents.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn). Detergent Surfactant (ABS). Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (DWR) as indicated.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in								parts per million equivalents per million					Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Barium (Ba)	Silica (SiO ₂)	Other constituents ^d			Total ppm	N.C. ppm		
San Benito County public swimming pool	MDB&M 13S/6E-34C2	6-14-61		1450	7.3	107	66	116	3.0	0	445	306	89	5.1	0.2	1.2	25	Fe 1.50 (Total)	938	32	540	175	USGS	
						5.34	5.46	5.05	0.08	0.00	7.29	6.37	2.51	0.08	0.01									
Monterey Bay Salt Co. industrial	13S/2E-7R1	7-27-61	76	856	8.4	17	6.9	156	2.6	6	234	88	88	0.8	0.1	0.2	48	529	82	71	0	USGS		
						0.85	0.57	6.79	0.07	0.20	3.84	1.83	2.48	0.01	0.01									
R. Bowen irrigation	13S/2E-10J1	7-19-61	78	495	8.4	27	13	54	1.5	8	165	5.2	64	0.3	0.2	0.1	49	303	49	122	0	USGS		
						1.35	1.09	2.35	0.04	0.27	2.70	0.11	1.80	0.00	0.01									
R. M. Cheek domestic and irrigation	13S/2E-13N1	7-19-61	68	250	8.2	10	6.3	30	1.0	0	69	1.0	40	1.1	0.2	0.0	70	194	55	51	0	USGS		
						0.50	0.52	1.30	0.03	0.00	1.13	0.02	1.13	0.02	0.01									
M. Minotto irrigation	13S/2E-16E1	7-5-61	66	1020	8.5	54	31	107	5.4	12	200	30	193	5.5	0.1	0.2	47	583	47	260	76	USGS		
						2.69	2.51	4.65	0.14	0.40	3.28	0.62	5.44	0.09	0.01									
T. Leonardini domestic and irrigation	13S/2E-19R1	7-5-61	70	970	8.2	62	28	92	2.5	0	232	23	175	1.8	0.1	0.1	57	556	42	268	78	USGS		
						3.09	2.27	4.00	0.06	0.00	3.80	0.48	4.94	0.03	0.01									
Calif. Artichoke and Vegetable Groves domestic and irrigation	13S/2E-20J1	7-5-61	70	962	8.2	64	29	86	2.4	0	200	37	175	3.0	0.1	0.0	56	552	40	278	114	USGS		
						3.19	2.37	3.74	0.06	0.00	3.28	0.77	4.94	0.05	0.01									
Permanente Cement Co. industrial	13S/2E-29C4	7-5-61	72	732	8.3	41	13	92	2.7	2	216	17	111	1.7	0.2	0.1	41	428	56	154	0	USGS		
						2.05	1.03	4.00	0.07	0.07	3.54	0.35	3.13	0.03	0.01									
J. J. King irrigation	13S/2E-31D2	7-6-61	70	709	8.2	33	14	90	2.6	0	201	21	111	1.0	0.2	0.1	49	421	58	139	0	USGS		
						1.65	1.13	3.92	0.07	0.00	3.29	0.44	3.13	0.02	0.01									
Molera domestic	13S/2E-31K2	7-6-61	66	568	8.6	41	14	64	2.3	13	210	12	60	1.1	0.3	0.2	43	354	46	159	0	USGS		
						2.05	1.13	2.78	0.06	0.43	3.44	0.25	1.69	0.02	0.02									
E. Bellone irrigation	13S/2E-31N2	7-12-61	66	812	8.3	32	19	100	2.2	3	172	22	150	2.4	0.4	0.2	41	456	57	158	13	USGS		
						1.60	1.56	4.35	0.06	0.10	2.82	0.46	4.23	0.04	0.02									
E. Bellone irrigation	13S/2E-31N2	7-6-61	72	1080	8.0	70	31	97	2.8	0	172	57	222	2.3	0.3	0.1	49	616	41	302	161	USGS		
						3.49	2.55	4.22	0.07	0.00	2.82	1.19	6.26	0.04	0.02									
Irrigation	13S/2E-32A2	7-5-61	72	559	8.2	31	13	63	2.5	0	195	13	71	1.3	0.2	0.1	51	342	51	131	0	USGS		
						1.55	1.07	2.74	0.06	0.00	3.20	0.27	2.00	0.02	0.01									
O. P. Overhouse irrigation	13S/2E-32C1	7-6-61	68	455	8.4	23	13	50	2.1	3	160	12	52	1.0	0.2	0.0	46	281	49	111	0	USGS		
						1.15	1.07	2.18	0.05	0.10	2.62	0.25	1.47	0.02	0.01									

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by					
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)			Nitrate (NO ₃)	Fluoride (F)		Barium (Ba)	Silica (SiO ₂)	Total	N.C.	
	<u>MDB&M</u>							<u>SALINAS VALLEY (3-4)</u>															
Molera irrigation	13S/2E-32N1	7-6-61	72	523	8.3	24 1.20	13 1.05	69 3.00	2.1 0.05	3 0.10	179 2.93	19 0.40	62 1.75	0.8 0.01	0.4 0.02	0.1	47		328	57	113	0	USGS
D. V. Orcutt irrigation	13S/2E-33E1	7-5-61	66	1690	7.9	134 6.69	60 4.91	90 3.92	2.9 0.07	0 0.00	117 1.92	52 1.08	435 12.27	1.4 0.02	0.2 0.01	0.1	47		881	25	580	484	USGS
C. Rieotti irrigation	13S/2E-33R1	7-5-61	66	699	8.5	64 3.19	22 1.77	53 2.31	2.4 0.06	8 0.27	209 3.43	67 1.39	73 2.06	4.1 0.07	0.3 0.02	0.1	39		436	32	248	64	USGS
R. Hollenbeck domestic and irrigation	13S/3E-41I1	7-18-61		338	7.9	14 0.70	10 0.82	36 1.57	0.7 0.02	0 0.00	92 1.51	4.4 0.09	49 1.38	7.5 0.12	0.2 0.01	0.0	60		227	50	76	1	USGS
F. B. Taganas domestic and irrigation	13S/3E-20B2	7-12-61		290	7.2	13 0.65	8.1 0.67	32 1.39	0.6 0.02	0 0.00	86 1.41	4.0 0.08	40 1.13	2.6 0.04	0.3 0.02	0.1	53		196	51	66	0	USGS
C. Lightfoot domestic and irrigation	13S/3E-29A1	7-12-61		573	7.8	16 0.80	17 1.36	66 2.87	1.1 0.03	0 0.00	66 1.08	10 0.21	125 3.52	7.9 0.13	0.1 0.01	0.1	62		338	57	108	54	USGS
V. Coto domestic	14S/1E-24Q2	7-26-61	63	1100	7.3	58 2.89	33 2.71	94 4.09	2.0 0.05	0 0.00	42 0.69	70 1.46	136 3.84	230 3.71	0.0 0.00	0.1	33		677	42	280	246	USGS
Marina Del Mar School domestic	14S/1E-25K1	7-25-61	64	538	7.1	27 1.35	15 1.23	49 2.13	1.6 0.04	0 0.00	44 0.72	18 0.37	80 2.26	82 1.32	0.1 0.01	0.0	26		321	45	129	93	USGS
Martin irrigation	14S/2E-60I1	7-12-61	70	559	8.5	24 1.20	13 1.08	74 3.22	2.0 0.05	6 0.20	170 2.79	50 1.04	54 1.52	1.2 0.02	0.4 0.02	0.1	56		365	58	114	0	USGS
E. Struve domestic and irrigation	14S/2E-68R2	7-6-61	73	540	8.4	33 1.65	13 1.07	66 2.87	2.1 0.05	6 0.20	198 3.25	41 0.85	53 1.49	0.7 0.01	0.4 0.02	0.1	49		361	51	136	0	USGS
D. V. Orcutt irrigation	14S/2E-9R1	7-7-61	68	610	8.2	43 2.15	19 1.55	54 2.35	3.3 0.08	0 0.00	157 2.57	100 2.08	48 1.35	0.1 0.00	0.2 0.01	0.2	48		393	38	185	56	USGS
J. P. Rodgers irrigation	14S/2E-11D1	7-13-61	66	498	8.2	42 2.10	16 1.34	37 1.61	2.0 0.05	0 0.00	215 3.52	12 0.25	45 1.27	0.9 0.01	0.2 0.01	0.0	40		301	32	172	0	USGS
E. C. Eatch domestic and irrigation	14S/2E-12Q1	7-13-61		508	8.6	50 2.50	18 1.44	32 1.39	1.4 0.04	11 0.37	222 3.64	9 0.19	37 1.04	2.2 0.04	0.3 0.02	0.0	33		303	26	197	0	USGS
L. A. Wilder domestic	14S/2E-14N1	7-12-61		599	8.5	47 2.35	17 1.37	52 2.26	2.8 0.07	9 0.30	187 3.06	48 1.00	60 1.69	1.2 0.02	0.2 0.01	0.1	46		375	37	186	18	USGS
Monterey County Bank domestic and irrigation	14S/2E-15L1	7-12-61		641	8.5	41 2.05	28 2.31	59 2.57	2.8 0.07	10 0.33	188 3.08	102 2.12	42 1.18	0.5 0.01	0.2 0.01	0.1	48		426	37	218	47	USGS

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b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

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- c. Determined by addition of constituents.
- d. Gravimetric determination.
- e. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
- f. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn),

QUALITY OF GROUND WATERS IN CALIFORNIA

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1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos of 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm _a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)			Nitrate (NO ₃)	Fluoride (F)		Boron (B)	Silica (SiO ₂)	Other constituents ^d
	<u>MDB&M</u>																				
J. Sino irrigation	15S/3E-504	7-14-61	70	2030	8.1	97 4.84	76 6.28	238 10.35	5.6 0.14	0 0.00	180 2.95	580 12.08	238 6.71	1.9 0.03	0.2 0.01	0.6	39	48	556	408	USGS
P. Giottinini irrigation	15S/3E-7D1	7-14-61	68	1190	8.1	85 4.24	56 4.64	82 3.57	4.3 0.11	0 0.00	156 2.56	318 6.62	125 3.52	0.2 0.00	0.2 0.01	0.3	38	28	444	316	USGS
Spreckels Sugar Co. irrigation	15S/3E-16M1	7-24-61	64	916	8.1	63 3.14	50 4.14	54 2.35	3.4 0.09	0 0.00	210 3.44	198 4.12	68 1.92	1.1 0.02	0.0	0.1	37	24	364	192	USGS
J. Violini irrigation	15S/3E-17P1	7-24-61	68	1260	7.4	133 6.64	43 3.56	86 3.74	9.2 0.24	0 0.00	629 10.31	33 0.69	90 2.54	5.9 0.10	0.2 0.01	0.1	47	26	510	0	USGS
J. Hugo domestic	16S/2E-11L1	7-10-61		618	7.5	26 1.30	15 1.22	74 3.22	1.8 0.05	0 0.00	140 2.29	9 0.19	111 3.13	1.5 0.02	0.4	0.1	62	56	126	11	USGS
A. C. Ambler domestic	16S/2E-2D3	7-10-61	68	826	7.3	59 2.94	17 1.38	86 3.74	2.8 0.07	0 0.00	240 3.93	26 0.54	128 3.61	0.9 0.01	0.2 0.01	0.2	53	46	216	19	USGS
Corral de Tierra Country Club domestic and irrigation	16S/2E-3J1	7-11-61	68	820	7.5	75 3.74	17 1.40	70 3.04	2.7 0.07	0 0.00	262 4.29	35 0.73	107 3.02	0.4 0.01	0.1 0.01	0.1	49	37	257	42	USGS
	16S/2E-3J2	7-11-61	78	1110	7.8	99 4.94	27 2.18	99 4.31	4.4 0.11	0 0.00	289 4.74	95 1.98	155 4.37	0.2 0.00	0.2 0.01	0.1	57	37	356	119	USGS
C. Phillips domestic	16S/2E-12G1	7-10-61		1100	8.2	48 2.40	25 2.02	130 5.66	1.8 0.05	0 0.00	156 2.56	14 0.29	248 6.99	5.4 0.09	0.1 0.01	0.1	58	56	221	93	USGS
K. R. Nutting irrigation	16S/4E-24A1	7-31-61	66	1770	7.8	139 6.94	78 6.38	149 6.48	4.0 0.10	0 0.00	258 4.23	497 10.35	150 4.23	53 0.85	0.2 0.01	0.5	38	33	666	454	USGS
irrigation	17S/6E-27K1	8-2-61	68	1280	8.1	80 3.99	50 4.12	118 5.13	3.1 0.08	0 0.00	193 3.16	348 7.25	111 3.13	4.0 0.06	0.2 0.01	0.5	40	39	406	248	USGS
V. Jacks irrigation	18S/6E-1E1	8-1-61	66	941	8.5	82 4.09	24 2.00	94 4.09	4.0 0.10	13 0.43	257 4.21	181 3.77	49 1.38	15 0.24	0.2 0.01	0.4	34	40	304	72	USGS
L. Jacke irrigation	18S/6E-2N1	7-47-61	60	1430	7.7	168 8.38	38 3.12	78 3.39	6.0 0.15	0 0.00	240 3.93	366 7.62	92 2.59	23 0.37	0.1 0.01	0.1	32	23	575	378	USGS
irrigation	18S/6E-28J1	8-1-61	66	400	8.1	43 2.15	12 0.99	21 0.91	2.2 0.06	0 0.00	138 2.26	63 1.31	13 0.37	1.6 0.03	0.3 0.02	0.0	39	22	157	44	USGS
irrigation	19S/7E-4G2	8-1-61	68	1520	7.9	129 6.44	70 5.72	100 4.35	3.0 0.08	0 0.00	244 4.00	400 8.33	136 3.84	24 0.39	0.3 0.02	0.4	41	26	608	408	USGS
irrigation	19S/7E-10P1	7-17-61	60	982	8.1	71 3.54	44 3.60	54 2.35	1.9 0.05	0 0.00	171 2.80	108 2.25	144 4.06	12 0.19	0.1 0.01	0.2	35	25	357	217	USGS

a. Determined by addition of constituents.

b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conduct- ence (micro- mhos at 25° C)	pH	Mineral constituents in equivalents per million										Total dis- solved solids in ppm a	Per- cent soli- dum	Hardness as CaCO ₃		Analyzed by c			
						parts per million												Total ppm	N.C. ppm				
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Fluo- ride (F)	Boron (B)						Silica (SiO ₂)	Other constituents	
						SALINAS VALLEY (3-4) (Cont'd)																	
domestic and irrigation	19S/7E-13D2	8-4-61	62	1250	8.0	81 4.04	51 4.16	118 5.13	2.4 0.06	0 0.00	232 3.80	348 7.25	82 2.31	8.5 0.14	0.3 0.02	0.5	36	842	38	410	220	USGS	
	19S/8E-32A1	8-4-61	68	3670	8.5	127 6.34	167 13.76	512 22.27	6.7 0.17	16 0.53	238 4.23	1360 28.32	315 8.88	23 0.37	0.4 0.02	2.1	34	2690	52	1000	762	USGS	
	19S/8E-33R1	8-4-61	64	2990	8.3	103 5.14	137 11.26	392 17.05	5.8 0.13	8 0.27	206 3.38	1080 22.49	266 7.50	23 0.37	0.4 0.02	1.6	36	2150	51	820	638	USGS	
	20S/8E-5R1	7-17-61	68	1520	8.1	80 3.99	53 4.37	159 6.92	3.4 0.09	0 0.06	164 2.69	404 8.41	159 4.48	16 0.2	0.2 0.01	1.0	42	999	45	418	284	USGS	
	20S/8E-6B1	8-4-61	64	661	8.3	34 1.70	27 2.24	70 3.04	1.6 0.04	2 0.07	200 3.28	109 2.27	36 1.02	12 0.3	0.3 0.02	0.3	34	424	43	197	30	USGS	
irrigation	20S/8E-2A72	8-3-61	70	3430	8.0	169 8.43	70 5.17	460 20.01	8.0 0.20	0 0.06	175 2.87	505 10.51	768 21.66	3.8 0.06	0.3 0.02	2.5	43	2120	58	710	566	USGS	
						CARRIS VALLEY (3-7)																	
B. Odelle irrigation	16S/1W-13L1	7-7-61	62	705	8.4	69 3.44	21 1.76	47 2.04	3.6 0.09	6 0.20	208 3.41	91 1.89	62 1.75	1.2 0.02	0.4 0.02	0.0	32	435	28	260	80	USGS	
City of Carmel Industrial	16S/1W-13L2	7-7-61	63	1080	7.3	81 4.04	27 2.20	94 4.09	3.8 0.10	0 0.06	229 3.75	81 1.69	160 4.51	1.9 0.3	0.3 0.02	0.0	30	592	39	312	124	USGS	
B. Odelle irrigation	16S/1W-13R1	7-18-61	61	705	8.5	64 3.19	24 1.97	51 2.22	3.2 0.08	10 0.33	189 3.10	109 2.27	56 1.58	0.9 0.01	0.3 0.02	0.1	28	440	30	258	87	USGS	
irrigation	16S/1E-17G1	7-7-61	64	1160	8.5	111 5.34	27 2.26	94 4.09	2.8 0.07	15 0.50	313 5.13	148 3.08	126 3.55	0.6 0.01	0.4 0.02	0.2	30	709	34	390	109	USGS	
irrigation	16S/1E-18F2	7-7-61	67	836	7.8	58 2.89	22 1.81	86 3.74	0.8 0.03	0 0.06	230 3.77	55 1.10	123 3.47	2.1 0.03	0.5 0.03	0.1	30	488	44	235	46	USGS	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Constituents (P.C.C.).

d. Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

e. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{1}{100}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
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						equivalents per million												Total ppm	N.C. ppm	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)					
	MEDIAN					CENTRAL VALLEY	REGION	NO. 5	LAKE VALLEY											
Franks Bros., domestic	44N/13E-36A1	8-24-61	64	184	8.0	13 0.05	2.6 0.21	22 0.96	1.8 0.05	100 1.64	4.1 0.08	1.0 0.03	5.2 0.15	0.3 0.02	0.14	31	51	43	0	IMR
H. J. Hacker, domestic	44N/14E-7K1	8-24-61	57	386	7.9	41 2.04	14 1.13	18 0.78	1.2 0.03	215 3.52	4.0 0.08	5.8 0.16	1.5 0.03	0.1 0.00	0.09	29	221	161	0	IMR
R. Jeanup, domestic	45N/13E-12L1	8-23-61	65	318	8.2	15 0.75	1.8 0.15	54 2.35	3.7 0.09	170 2.79	16 0.33	5.1 0.11	0.8 0.01	0.3 0.02	0.27	46	227	45	0	IMR
C. Weid, domestic	45N/14E-32L1	8-24-61	60	234	8.0	26 1.30	9.7 0.70	12 0.52	1.6 0.04	148 2.42	0.0 0.00	5.5 0.16	1.8 0.03	0.2 0.01	0.09	58	188	105	0	IMR
L. King, domestic	46N/14E-32L1	8-23-61	178	178	7.8	14 0.70	6.6 0.54	10 0.44	4.1 0.10	89 1.46	2.0 0.04	6.1 0.17	2.8 0.04	0.1 0.00	0.09	65	155	62	0	IMR
C. R. Vincent, domestic & stock	47N/14E-2H1	8-23-61	552	552	8.2	2.3 0.11	0.0 0.00	118 5.13	1.8 0.05	135 2.21	54 1.12	61 1.72	1.5 0.02	3.5 0.15	3.4	46	358	4	0	IMR
L. L. Smith, domestic	-14H2	8-23-61	149	149	7.5	17 0.55	4.5 0.37	5.9 0.26	1.7 0.04	96 1.41	1.0 0.02	0.0 0.00	4.7 0.05	0.1 0.00	0.03	33	110	61	0	IMR
A. Greenwood, domestic & garden	43N/13E-20G1	8-23-61	59	495	8.5	61 3.04	23 1.50	16 0.70	4.3 0.11	302 4.55	5.9 0.12	1.5 0.05	10 0.11	0.1 0.00	0.07	49	330	247	0	IMR
H. C. Wells, domestic	42N/14E-23K1	8-23-61	59	208	7.6	20 1.00	5.6 0.46	14 0.61	1.2 0.03	115 1.88	5.3 0.11	1.2 0.03	1.4 0.02	0.1 0.00	0.09	52	157	73	0	IMR
Clara M. Cloud, domestic	-35A1	8-23-61	183	183	7.9	22 1.10	5.4 0.44	8.2 0.36	0.5 0.01	101 1.66	2.5 0.05	0.4 0.01	9.2 0.15	0.1 0.00	0.06	33	131	77	0	IMR
Clara M. Cloud, irrigation & stock	-35A2	8-23-61	726	726	8.4	5.2 0.26	0.5 0.04	154 6.70	5.0 0.13	208 3.41	30 0.62	92 2.59	7.1 0.11	3.5 0.15	4.5	62	470	15	0	IMR
D. Flourney, domestic	39N/13E-6N1	8-24-61	194	194	8.0	8.2 0.41	1.8 0.15	28 1.22	5.2 0.13	106 1.74	2.0 0.04	3.3 0.05	1.5 0.02	0.1 0.00	0.08	55	157	28	0	IMR
N. Monroe, stock	40N/12E-11F	8-24-61	71	162	8.0	1.0 0.00	2.2 0.13	18 0.78	5.3 0.14	81 1.33	4.1 0.08	3.3 0.05	2.0 0.03	0.2 0.01	0.07	72	155	29	0	IMR
Pit River Ranch, domestic	-25J1	8-24-61	66	464	8.5	21 1.05	8.9 0.73	72 3.13	11 0.28	278 4.58	7.1 0.15	3.4 0.06	2.6 0.04	0.2 0.01	0.14	70	340	89	0	IMR
F. Calverell, domestic	41N/11E-2H2	8-24-61	1,010	1,010	8.0	11 0.55	1.8 0.15	206 8.96	5.6 0.14	214 3.51	108 3.50	108 3.04	2.0 0.03	0.2 0.01	0.15	54	662	35	0	IMR
Patricia Moyers, domestic & irrigation	41N/11E-2H1	8-24-61	331	331	8.2	4.0 0.20	0.0 0.00	63 2.74	14 0.36	129 2.11	38 0.79	13 0.37	0.5 0.01	0.2 0.01	0.03	71	267	83	0	IMR
Pacific Telephone, domestic	41N/12E-15H1	8-24-61	222	222	8.0	13 0.65	1.3 0.11	27 1.17	7.0 0.19	108 1.77	6.6 0.14	6.0 0.17	3.3 0.05	0.2 0.01	0.15	80	193	58	0	IMR

a. Determined by addition of constituents.
b. Gravimetric determination.
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d. Iron (Fe), Aluminum (Al), Arsenic (As), Zinc (Zn), reported here as $\frac{100}{\text{ppm}}$ except as shown

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm
						CENTRAL VALLEY	REGION (No. 5)	ALTURAS BASIN (5-2)															
Morgan Bros., domestic	41N/13B-18F1	8-24-61	64	833	8.6	107 5.34	40 3.25	18 0.78	8.8 0.22	12 0.40	235 4.95	235 4.95	12 0.34	5.1 0.08	0.4 0.02	0.08	66			8	430	217	IMR
J. H. Michael, domestic	42N/10B-29H1	8-24-61		260	8.2	3.5 0.17	0.1 0.01	59 2.57	1.4 0.04	0	141 3.31	15 0.31	2.8 0.08	0.2 0.00	0.2 0.01	0.09	37	As 0.01		92	9	0	IMR
F. Martin	42N/11B-15E1	8-24-61	63	446	8.3	2.7 0.13	0.1 0.01	101 4.35	9.0 0.23	0	235 5.05	30 0.62	8.2 0.23	0.6 0.01	0.2 0.01	0.05	64			92	7	0	IMR
L. Hoings, domestic & stock	-24A1	8-24-61	61	197	8.0	18 0.90	5.1 0.42	13 0.56	5.3 0.14	0	96 2.17	3.4 0.07	5.5 0.16	2.5 0.15	0.3 0.02	0.05	63			28	66	0	IMR
City of Alturas, municipal	42N/12B-11Q1	8-23-61	74	475	8.1	24 1.20	3.9 0.32	64 2.78	12 0.31	0	169 3.6	36 0.75	38 1.07	2.8 0.04	0.3 0.02	0.76	80	As 0.01		60	76	0	IMR
Younger, domestic	42N/13B-31Q1	8-24-61	61	564	8.3	22 1.10	5.1 0.42	101 4.39	10 0.26	2	365 7.94	5.3 0.11	3.0 0.08	0.4 0.01	0.3 0.02	0.28	79			71	76	0	IMR
E. Swanson, domestic	-32G1	8-24-61	55	353	8.4	33 1.65	10 0.83	24 1.04	5.7 0.14	1	216 4.69	4.3 0.09	3.0 0.08	0.5 0.01	0.2 0.01	0.05	57			28	124	0	IMR
T. E. Connolly, domestic	37N/7B-13B1	9-6-61	62	200	8.2	12 0.60	6.1 0.50	17 0.74	4.4 0.11	0	108 2.36	1.6 0.03	2.2 0.06	2.3 0.04	0.2 0.01	0.09	62	As 0.01		38	55	0	IMR
W. H. Gerlag, domestic	38N/7B-2P1	9-6-61	64	500	8.1	34 1.70	16 1.28	42 1.83	11 0.28	0	235 5.03	3.0 0.06	37 1.04	5.0 0.03	0.2 0.01	0.08	74			36	149	0	IMR
City of Bieber, municipal	23M	9-6-61		259	8.2	25 1.25	4.2 0.35	25 1.09	2.7 0.07	0	144 3.13	6.2 0.13	6.7 0.19	1.3 0.02	0.3 0.02	0.03	63	As 0.10		39	80	0	IMR
H. Simer, hot springs, domestic	38N/8B-14P1	9-7-61	92	1,300	8.4	31 1.55	0.1 0.01	220 9.57	4.9 0.12	2	32 0.92	267 7.64	110 3.10	1.6 0.02	1.9 0.10	5.4	85			85	78	48	IMR
F. Leonard, domestic	-17K	9-7-61	62	213	8.0	15 0.75	10 0.83	14 0.71	2.9 0.07	0	123 2.02	6.7 0.14	1.7 0.05	0.5 0.01	0.2 0.01	0.02	62			27	79	0	IMR
Marie Walsh, domestic	-30R1	9-7-61	55	698	8.1	46 2.40	36 2.99	22 0.90	5.7 0.14	0	133 2.97	27 0.55	52 1.47	1.37 2.21	0.2 0.01	0.00	62	ABS 0.0		15	270	161	IMR
J. E. Albaugh, domestic & stock	38N/9B-8E2	9-7-61	63	333	8.2	26 1.30	11 0.88	22 0.96	5.3 0.14	0	152 3.29	6.2 0.13	12 0.34	1.3 0.21	0.2 0.01	0.07	70			29	109	0	IMR
A. L. Knudson, domestic	-21H1	9-7-61	70	333	8.4	18 0.90	4.4 0.36	45 1.96	7.6 0.19	2	194 4.33	2.6 0.05	2.8 0.08	0.1 0.00	0.2 0.01	0.03	80			57	63	0	IMR
E. C. Robinson, domestic	39N/7B-11A1	9-6-61	62	255	8.2	16 0.80	6.3 0.52	27 1.17	4.5 0.12	0	122 2.00	0.3 0.01	5.3 0.15	2.4 0.39	0.2 0.01	0.07	62			45	66	0	IMR
D. Yorell, domestic	-13Q1	9-6-61	61	196	8.0	10 0.50	1.4 0.12	30 1.30	1.9 0.05	0	102 2.27	9.7 0.20	4.6 0.13	0.9 0.01	0.2 0.01	0.05	68			66	31	0	IMR

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						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ride (NO ₃)	Fluo-ride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm
L. Roberts domestic	MD&M 39N/7E-14R1	9-6-61	58	755	8.4	55 2.74	29 2.35	61 2.65	1.6 0.04	8 0.27	288 4.72	41 0.85	44 1.24	43 0.69	0.2 0.01	0.06	55	ABS 0.0	34	257	8	DMR
R. Holmes domestic	39N/8E-23A2	9-7-61	62	184	8.1	4.8 0.24	1.7 0.14	21 1.35	4.7 0.12	0	96 1.57	6.7 0.14	1.7 0.05	3.8 0.06	0.2 0.01	0.05	73	AS 0.02	73	19	0	DMR
L. A. Meeks	-26L1	9-7-61	60	552	7.8	37 1.85	18 1.45	41 1.78	5.2 0.13	0	139 2.28	4.0 0.83	34 0.96	72 1.16	0.6 0.03	0.03	59	AS 0.17 ABS 0.0	34	165	51	DMR
R. Swalo domestic	39N/9E-28P20	9-7-61	66	170	8.0	15 0.75	2.8 0.23	15 0.65	4.9 0.12	0	103 1.69	0.6 0.01	0.8 0.02	0.4 0.01	0.2 0.01	0.02	57		37	49	0	DMR
W. L. Bickel domestic	37N/4E-11L1	9-5-61	58	886	7.2	52 2.59	32 2.68	91 3.96	7.6 0.19	0	487 7.98	0.0 0.00	0.5 0.01	83 1.34	0.2 0.01	0.12	49	Al 0.08 Fe (total) 1.5 Mn 0.52 Zn 0.17 ABS 0.0	42	264	0	DMR
V. Cesena irrigation	37N/5E-10L1	9-6-61	61	193	8.2	18 0.90	4.9 0.40	15 0.65	2.6 0.07	0	113 1.85	3.3 0.07	2.6 0.07	0.4 0.01	0.0 0.00	0.07	38		32	65	0	DMR
Intermountain Fair municipal	-9N1	9-6-61	60	614	7.6	33 1.65	15 1.21	88 3.82	4.8 0.12	0	384 6.29	3.3 0.07	16 0.45	5.3 0.08	0.3 0.02	0.20	59	Cu 0.02 Fe (total) 0.12 Mn 0.41 Zn 0.02 AS 0.01 Cu 0.02 Fe (total) 0.01	56	143	0	DMR
W. C. Moen domestic	-14R1	9-6-61	60	177	8.2	0.7 0.03	0.8 0.07	40 1.74	1.6 0.04	0	100 1.64	4.8 0.10	2.9 0.08	0.1 0.00	0.2 0.01	0.06	46		92	5	0	DMR
R. Reynolds irrigation	-19P2	9-7-61	58	489	7.7	23 1.15	15 1.27	57 2.48	5.4 0.14	0	317 5.20	0.0 0.00	2.4 0.07	1.2 0.02	0.6 0.03	0.11	65	Al 0.03 Cu 0.01 Fe (total) 1.2 Mn 0.01 Zn 0.04	47	121	0	DMR
L. Joachim irrigation	37N/6E-61L1	9-6-61	60	258	8.2	21 1.05	15 1.23	13 0.56	2.3 0.06	0	168 2.75	0.6 0.01	2.4 0.07	1.2 0.02	0.1 0.00	0.02	41	Al 0.01 Cu 0.01	19	114	0	DMR
L. A. Carpenter domestic	-19L1	9-6-61	61		7.9	22 1.10	4.1 0.34	9.8 0.43	2.6 0.07	0	95 1.56	2.6 0.05	1.0 0.03	0.16 0.026	0.2 0.01	0.05	47	Cu 0.01 Fe (total) 0.01 Zn 0.04	22	72	0	DMR
R. L. Clark domestic	-29B1	9-6-61		263	8.0	25 1.25	10 0.83	12 0.52	3.8 0.10	0	127 2.08	2.5 0.05	4.1 0.12	25 0.40	0.2 0.01	0.05	52	Al 0.01 Cu 0.01 Fe (total) 0.03 Zn 0.25	19	104	0	DMR
R. A. Peters domestic	38N/3E-24F1	9-5-61	60	139	7.3	13 0.65	7.8 0.64	4.0 0.17	0.9 0.02	0	84 1.35	0.0 0.00	0.3 0.01	2.8 0.04	0.0 0.00	0.03	34	Al 0.01 Fe (total) 0.03 Zn 0.48	11	65	0	DMR
E. V. Johnson domestic	38N/4E-30H1	9-5-61	56	213	7.0	7.8 0.39	14 1.17	14 0.61	3.0 0.08	0	124 2.03	0.0 0.00	3.8 0.11	3.2 0.05	0.1 0.00	0.08	58	Al 0.02 Fe (total) 3.0 Pb 0.03 Mn 0.61 Zn 0.08	27	78	0	DMR

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{mg}{kg}$ except as shown.

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																		Total ppm	N.C. ppm			
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- tro- le (NO ₃)	Fluo- ride (F)						Boron (B)	Silico (SiO ₂)
C. Boyle domestic	MDRBM 32N/3W-32J1	8-25-61		475	8.1	$\frac{38}{1.90}$	$\frac{16}{1.28}$	$\frac{74}{1.48}$	$\frac{2.2}{0.06}$	$\frac{0}{0.00}$	$\frac{182}{2.98}$	$\frac{14}{0.29}$	$\frac{32}{0.90}$	$\frac{33}{0.55}$	$\frac{0.1}{0.00}$	$\frac{0.07}{0.04}$	$\frac{55}{70}$	313	31	159	10	DwR
	32N/3W-35C1	11-15-61		203	7.7	$\frac{13}{0.65}$	$\frac{9.1}{0.75}$	$\frac{16}{0.70}$	$\frac{2.3}{0.06}$	$\frac{0}{0.00}$	$\frac{124}{2.65}$	$\frac{2.1}{0.04}$	$\frac{3.1}{0.09}$	$\frac{0.00}{0.00}$	$\frac{0.2}{0.01}$	$\frac{0.04}{0.01}$	$\frac{70}{21}$	177	32	70	0	DwR
W. Ross	-1681	8-8-61		94	7.1	$\frac{4.5}{0.22}$	$\frac{3.4}{0.28}$	$\frac{7.0}{0.30}$	$\frac{0.3}{0.01}$	$\frac{0}{0.00}$	$\frac{21}{0.34}$	$\frac{1.3}{0.03}$	$\frac{7.0}{0.20}$	$\frac{15}{0.24}$	$\frac{0.0}{0.00}$	$\frac{0.53}{0.06}$	$\frac{21}{35}$	80	37	25	8	DwR
E. Jones domestic	32N/4W-20Q2	8-8-61		337	8.0	$\frac{4.7}{0.23}$	$\frac{2.1}{0.17}$	$\frac{69}{3.00}$	$\frac{1.4}{0.04}$	$\frac{0}{0.00}$	$\frac{157}{2.57}$	$\frac{2.5}{0.05}$	$\frac{27}{0.76}$	$\frac{0.3}{0.00}$	$\frac{0.3}{0.02}$	$\frac{0.76}{0.35}$	$\frac{35}{28}$	220	87	20	0	DwR
Columbia School Dist. domestic	-34F1	11-15-61		298	7.9	$\frac{14}{0.70}$	$\frac{8.3}{0.66}$	$\frac{35}{1.52}$	$\frac{1.1}{0.03}$	$\frac{0}{0.00}$	$\frac{131}{2.15}$	$\frac{0.2}{0.00}$	$\frac{27}{0.76}$	$\frac{0.4}{0.01}$	$\frac{0.2}{0.01}$	$\frac{0.35}{0.21}$	$\frac{38}{31}$	188	52	69	0	DwR
H. Snow, Jr. domestic	32N/5W-26M1	8-8-61		396	8.4	$\frac{27}{1.35}$	$\frac{7.2}{0.59}$	$\frac{48}{2.09}$	$\frac{1.2}{0.03}$	$\frac{4}{0.13}$	$\frac{168}{2.75}$	$\frac{38}{0.79}$	$\frac{11}{0.31}$	$\frac{1.4}{0.02}$	$\frac{0.5}{0.03}$	$\frac{0.21}{0.05}$	$\frac{31}{1}$	252	51	97	0	DwR

o. Determined by addition of constituents.

b. Determined by addition of

b. Gravimetric determination.

b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{a.0}{a.0g}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in										parts per million					Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)	Silica (SiO ₂)	Other constituents	Total ppm	N.C. ppm					
SIERRA VALLEY (5-12)																									
R. Bradley domestic	20N/1ME-402	9-4-61	56	192	8.1	17 0.85	6.9 0.57	13 0.56	4.0 0.10	0	123 2.02	0.0	1.4 0.04	0.9 0.01	0.1 0.00	0.05	34			137	27	71	0	DMR	
G. McMillen domestic	21N/1ME-1511	9-6-61	68	451	7.8	8.5 0.42	7.0 0.58	71 3.09	0.9 0.02	0	123 2.02	0.0	48 1.35	32 0.52	0.6 0.03	0.14	50			278	75	50	0	DMR	
G. Van Vleck domestic	-2211	9-6-61	56	740	7.9	23 1.15	16 1.29	96 4.18	11 0.28	0	166 2.72	1.6	126 3.55	7.7 0.12	0.3 0.02	0.80	47			426	60	122	0	DMR	
E. Androus domestic	-2911	9-6-61	60	225	7.9	19 0.95	14 1.13	8.7 0.38	0.7 0.02	0	146 2.39	0.0	0.0	0.3 0.00	0.2 0.01	0.02	40			155	15	104	0	DMR	
P. A. Torri domestic	-3611	9-6-61	58	198	8.0	16 0.86	9.5 0.78	12 0.52	2.4 0.06	0	120 1.97	2.6	0.7 0.02	1.4 0.02	0.2 0.01	0.04	45			149	24	79	0	DMR	
E. Filipini domestic	21N/1SE-5D1	9-6-61		1,640	7.9	15 0.75	1.1 0.09	314 13.66	6.8 0.17	0	158 2.59	182	302 8.52	0.3 0.00	1.0 0.05	6.2	92			998	93	42	0	DMR	
J. D'Andrea domestic and stock	-943	9-6-61	66	235	8.2	11 0.55	5.7 0.47	27 1.17	4.8 0.12	0	122 2.00	2.7	1.0 0.03	5.3 0.00	0.2 0.01	0.19	63			188	51	51	0	DMR	
L. Ravey domestic	22N/1ME-14F	9-5-61	59	150	8.1	13 0.65	7.4 0.61	7.7 0.33	1.2 0.03	0	94 1.54	0.3	0.0	0.2 0.00	0.1 0.00	0.02	44			120	20	63	0	DMR	
J. Roberti domestic and stock	22N/1SE-11F1	9-5-61	68	622	7.8	7.9 0.39	3.3 0.27	114 4.96	6.1 0.16	0	311 5.10	0.0	33 0.93	1.1 0.02	1.1 0.06	0.97	105			425	86	33	0	DMR	
Huntley Bros. domestic and stock	-12B1	9-5-61	75	184	7.4	6.6 0.33	3.0 0.25	23 1.00	5.5 0.14	0	41 0.67	0.0	4.6 0.13	50 0.01	0.9 0.05	0.09	85			199	58	29	0	DMR	
P. Scolari domestic and stock	-17C3	9-5-61	84	382	7.8	5.0 0.25	1.1 0.09	73 3.18	2.1 0.05	0	182 2.98	0.0	21 0.59	3.0 0.05	0.3 0.02	1.0	84			280	89	17	0	DMR	
Lucky Hereford Ranch domestic and stock	-26K2	9-6-61		987	8.3	10 0.50	19 1.60	176 7.66	1.3 0.03	0	274 4.49	160	67 1.89	8.9 0.14	0.1 0.00	0.22	37			614	78	105	0	DMR	
E. Filipini stock	-32F1	9-6-61	212	2,640	7.8	44 2.20	0.5 0.04	496 21.58	20 0.51	0	46 0.75	362	567 15.99	0.9 0.01	2.5 0.13	9.1	107			1,630	89	112	74	DMR	
C. Franchini stock	22N/16E-512	9-5-61	75	192	7.2	5.8 0.29	1.6 0.13	26 1.13	3.3 0.08	0	105 1.72	0.0	2.8 0.08	1.1 0.02	0.8 0.04	0.10	76			170	69	21	0	DMR	
Lucky Hereford Ranch irrigation	-19E1	9-6-61	65	216	8.2	11 0.55	6.9 0.57	20 0.87	6.6 0.17	0	107 1.75	2.3	6.6 0.19	6.9 0.11	0.2 0.01	0.13	61			175	40	56	0	DMR	
Mervino Air Service domestic	23N/14E-25G1	9-5-61	58	389	8.0	43 2.14	10 0.32	19 0.83	1.1 0.03	0	145 2.38	14	14 0.39	44 0.71	0.2 0.01	0.11	47			263	22	148	29	DMR	

a. Determined by addition of constituents

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ^{0.01}/₁₀₀ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

Owner and use	Store well number and other number	Date sampled	Temp in F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)			Boron (B)	Silico (SiO ₂)		Other constituents	Total ppm
A. Polchi domestic and stock	23W/14B-35L1	9-5-61	64	797	8.0	24	0.5	136	1.0	0	87	118	120	1.6	0.2	1.9	20		82	62	DMR	
						1.20	0.04	5.92	0.02	0.00	1.72	2.16	3.38	0.02	0.01							
L. Benner domestic	23W/15B-28W4	9-5-61	56	308	7.3	50	0.7	11	4.2	0	174	0.0	2.8	0.1	0.07	58		15	128	DMR		
						2.50	0.06	0.43	0.11	0.00	2.95	0.00	0.03	0.13	0.00							
stock	-35C1	9-5-61	74	372	7.6	7.5	4.5	56	5.2	0	75	0.0	42	38	1.2	1.0	72	74	37	DMR		
						0.37	0.37	2.44	0.13	0.00	1.23	0.00	1.18	0.61	0.06							
Overington domestic	14W/9W-6P2	6-21-61		45	6.1	1.7	2.4	2.2	0.6	0	11	0.0	1.9	10	0.0	0.05	17	25	14	5	DMR	
						0.04	0.20	0.10	0.02	0.00	0.18	0.00	0.05	0.16	0.00							
B. Patten irrigation	14W/10W-14E2	6-21-61		230	7.3	25	10	8.0	0.7	0	124	9.0	4.6	2.4	0.2	0.16	14	14	104	2	DMR	
						1.25	0.83	0.35	0.02	0.00	2.03	0.19	0.13	0.04	0.01							
L. Skaggs	15W/9W-6P1	6-20-61		186	7.7	18	8.3	6.4	0.7	0	95	9.9	3.6	2.6	0.1	0.06	14	15	79	1	DMR	
						0.90	0.03	0.28	0.02	0.00	1.56	0.21	0.10	0.04	0.00							
U. Lake Cem. District irrigation	-7B	6-20-61		253	7.8	19	13	15	0.8	0	150	5.4	3.3	0.5	0.2	0.39	37	24	101	0	DMR	
						0.95	1.07	0.65	0.02	0.00	2.76	0.11	0.09	0.01	0.01							
G. Bowers domestic	-17P1	6-20-61		418	7.6	24	33	14	0.7	0	254	10	4.5	3.5	0.3	0.12	34	24	13	196	0	DMR
						1.20	2.72	0.01	0.02	0.00	4.16	0.21	0.13	0.06	0.02							
E. Vehand domestic	-31P1	6-21-61		182	7.9	8.3	10	12	1.3	0	97	2.0	6.7	1.6	0.1	0.04	27	29	63	0	DMR	
						0.41	0.85	0.52	0.03	0.00	1.59	0.04	0.19	0.02	0.00							
E. Lewis, Sr. domestic and stock	15W/10W-3C1	6-21-61		393	7.5	39	22	8.8	0.2	0	208	13	7.7	9.9	0.1	0.10	18	9	189	19	DMR	
						1.95	1.83	0.38	0.00	0.00	3.41	0.27	0.22	0.16	0.00							
L. Pecinovsky domestic	-311	6-22-61		875	7.6	131	24	27	2.7	0	379	102	45	0.2	0.3	0.16	19	12	425	114	DMR	
						6.51	1.95	1.17	0.07	0.00	6.21	2.12	1.27	0.00	0.02							
B. Dutton domestic	-10E1	6-22-61		1,870	8.2	28	5.1	364	1.9	0	281	1.8	448	1.8	3.0	67	6.2	89	91	0	DMR	
						1.40	0.42	15.83	0.05	0.00	4.60	0.04	12.63	0.03	0.16							
Lake Co. Cannery, Inc. industrial	-12K	6-20-61		210	8.0	21	9.6	7.3	0.7	0	113	10	3.3	1.8	0.1	0.07	16	15	92	0	DMR	
						1.05	9.79	0.32	0.02	0.00	1.85	0.21	0.09	0.03	0.00							
C. Davis domestic	-13A1	6-22-61		226	7.3	12	15	12	0.6	0	146	0.0	1.9	0.1	0.3	0.39	61	22	92	0	DMR	
						0.60	1.24	0.52	0.02	0.00	2.39	0.00	0.05	0.00	0.02							
H. Jarvis irrigation	-24W1	6-22-61		438	7.4	25	23	32	0.3	0	225	12	19	1.6	0.5	0.28	33	31	156	0	DMR	
						1.25	1.87	1.39	0.01	0.00	3.69	0.25	0.54	0.02	0.03							

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (DWR), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)			Fluoride (F)	Barium (Ba)		Silica (SiO ₂)	Other constituents	Total ppm	N.C. ppm
A. Santos domestic	16N/94-31L3	6-20-61	212	7.1		24	6.6	8.6	1.3	0	120	5.3	4.0	0.4	0.2	0.07	9.6	119	17	87	0	DWR
						1.20	0.54	0.37	0.03	0.00	1.97	0.11	0.11	0.01								
R. Field irrigation	13N/94-2K2	6-21-61	589	7.5		27	57	10	1.3	0	352	18	12	5.2	0.1	0.17	39	343	7	304	15	DWR
						1.35	4.72	0.44	0.03	0.00	5.77	0.37	0.34	0.00								
C. Benson irrigation	-3C1	6-22-61	346	8.3		17	32	6.2	1.0	0	202	7.1	4.6	5.6	0.1	0.11	32	205	7	174	8	DWR
						0.85	2.63	0.27	0.02	0.00	3.31	0.15	0.13	0.00								
E. Turner irrigation	-6C1	6-22-61	879	7.7		44	82	27	1.0	0	542	30	23	0.0	0.3	0.46	54	528	12	446	2	DWR
						2.20	6.71	1.17	0.02	0.00	8.88	0.62	0.65	0.02								
Davidson irrigation	-8C1	6-22-61	414	8.2		26	34	10	0.7	0	249	13	5.8	4.5	0.2	0.28	25	241	10	203	0	DWR
						1.30	2.76	0.44	0.02	0.00	4.08	0.27	0.16	0.01								
H. Marschall domestic	-8N1	6-22-61	252	7.8		22	14	11	0.6	0	146	3.1	6.0	0.6	0.2	0.18	25	155	18	111	0	DWR
						1.10	1.12	0.48	0.02	0.00	2.39	0.06	0.17	0.01								
H. Marschall stock and irrigation	-8N2	6-22-61	648	7.2		43	34	30	1.3	0	250	17	48	36	0.2	0.46	29	374	20	247	42	DWR
						2.11	2.86	1.30	0.33	0.00	4.10	0.35	1.35	0.01								
L. Wright irrigation	-12W1	6-21-61	525	8.4		18	43	25	5.5	8	278	2.1	30	1.1	0.2	0.67	73					DWR
						0.90	3.56	1.09	0.14	0.27	4.54	0.04	0.85	0.02								
M. Fraser irrigation	-16D1	6-22-61	922	8.3		50	94	23	2.8	0	656	0.0	10	14	0.1	0.75	84	601	9	511	0	DWR
						2.50	7.71	1.00	0.07	0.00	10.75	0.00	0.28	0.00								
M. Fraser domestic	-16D2	6-22-61	306	8.0		25	19	8.7	0.8	0	175	7.2	3.8	2.3	0.1	0.32	20	173	12	142	0	DWR
						1.25	1.59	0.38	0.02	0.00	2.87	0.15	0.11	0.00								
W. Stone irrigation	-22D1	6-21-61	472	8.4		11	53	9.2	1.3	7	280	8.6	9.2	3.8	0.2	0.08	53	295	7	246	3	DWR
						0.55	4.37	0.40	0.03	0.23	4.59	0.18	0.26	0.01								
I. Morrison domestic and irrigation	14N/94-32D1	6-21-61	695	7.8		51	58	14	0.8	0	450	4.9	12	2.6	0.3	0.19	76	441	8	365	0	DWR
						2.54	4.75	0.61	0.02	0.00	7.38	0.10	0.34	0.02								
I. Morrison irrigation	-32D2	6-21-61	528	8.4		35	46	12	1.0	5	330	10	8.5	0.1	0.3	0.77	65	345	8	276	0	DWR
						1.75	3.76	0.52	0.02	0.17	5.41	0.21	0.24	0.00								

a. Determined by addition of constituent.

b. Gravimetric determination.

c. Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.),

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
						TEHAMA COUNTY (5-21)																	
Kelsey irrigation	23N/24-5A	6-28-61	70	338	8.2	23 1.15	15 1.21	28 1.22	1.2 0.05	0 0.00	200 3.28	6.6 0.14	4.4 0.12	3.1 0.05	0.2 0.01	0.07	28		208	34	118	0	DWR
W. Angleton irrigation	23N/34-22Q	6-28-61	70	351	8.0	26 1.30	16 1.30	21 0.91	0.8 0.02	0 0.00	160 2.62	15 0.31	20 0.56	1.5 0.02	0.1 0.00	0.25	27		207	26	130	0	DWR
D. D. Smith domestic & stock	-3581	6-28-61	68	202	7.6	14 0.70	8.8 0.72	13 0.56	0.6 0.02	0 0.00	76 1.24	7.4 0.15	14 0.39	7.4 0.12	0.2 0.01	0.14	29		132	28	71	9	DWR
J. Ayres domestic & irrigation	24N/24-30C1	6-28-61	66	508	8.4	36 1.80	30 2.50	26 1.13	1.0 0.02	6 0.20	263 4.31	18 0.37	15 0.42	11 0.18	0.2 0.01	0.07	22		304	21	215	0	DWR
G. Saulsbury domestic & irrigation	24N/34-3P1	6-28-61	65	340	8.2	24 1.70	16 1.28	10 0.44	0.8 0.02	0 0.00	158 2.59	22 0.45	6.8 0.19	14 0.22	0.1 0.00	0.06	30		212	13	149	19	DWR
H. J. Moran & Son irrigation	-44K1	1-13-61		235	7.9	23 1.15	12 1.01	8.0 0.35	0.8 0.02	0 0.00	116 1.90	13 0.27	5.5 0.16	8.6 0.14	0.1 0.00	0.06	35		132	14	108	13	DWR
H. J. Moran & Son irrigation	-44K1	6-28-61	68	294	8.3	28 1.40	16 1.28	9.2 0.40	0.7 0.02	0 0.00	148 2.42	18 0.37	5.0 0.14	12 0.19	0.1 0.00	0.08	28		190	13	134	13	DWR
Corning High School	-144K1	6-29-61	68	239	8.0	22 1.10	11 0.92	11 0.48	0.7 0.02	0 0.00	134 2.20	4.3 0.09	3.4 0.10	8.6 0.14	0.1 0.00	0.06	33		160	19	101	0	DWR
W. E. Turner irrigation	-20N1	6-28-61	68	168	7.8	9.7 0.48	8.3 0.68	12 0.52	0.5 0.01	0 0.00	90 1.48	5.4 0.11	1.4 0.04	0.9 0.08	0.2 0.01	0.06	37		123	31	58	0	DWR
A. Miller domestic	24N/54-2111	6-28-61	70		8.2	25 1.25	10 0.85	26 1.13	1.1 0.03	0 0.00	161 2.64	13 0.27	15 0.42	1.0 0.02	0.1 0.00	0.05	36		206	35	105	0	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{mg}}{\text{kg}}$ except as shown.

1961

a. Gravimetric determination.
b. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
c. Terminal Testing Laboratory (T.T.L.), Aluminum (Al), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ag except as shown
Iron (Fe), ag except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conduct- (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dis- solved solids in ppm	Per- cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- tro- le (NO ₃)	Fluo- ride (F)			Boron (B)	Silico (SiO ₂)		Other constituents ^d	Total ppm
W. Wellin domestic	18N/2W-1E1	8-26-61	69	544	8.4	39 1.95	28 2.33	44 1.91	4.3 0.03	6 0.20	339 5.56	13 0.27	5.0 0.14	2.7 0.04	0.3 0.02	0.19	33	338	31	214	0	DWR
		8-30-61	70	1,040	8.3	5.1 2.54	66 5.43	98 4.28	0.5 0.01	0 0.00	518 8.49	157 3.27	14 0.39	4.6 0.07	0.8 0.04	0.38	30	677	35	399	0	DWR
E. Frick irrigation	18N/3W-10K1	8-30-61	73	524	8.3	31 1.55	17 1.41	61 2.65	0.7 0.02	0 0.00	275 4.51	29 0.60	17 0.48	4.2 0.07	0.7 0.04	0.32	24	320	47	148	0	DWR
		8-30-61	73	904	8.3	60 2.99	36 2.93	78 3.39	0.8 0.02	0 0.00	357 5.85	19 0.40	88 2.43	4.5 0.72	0.7 0.04	0.18	28	532	36	299	6	DWR
Michaels Ranch domestic	19N/2W-6G1	8-26-61	70	351	7.6	35 1.55	18 2.53	12 1.35	0.6 0.02	0 0.00	200 5.00	9.0 0.17	4.0 0.14	3.4 0.06	0.2 0.02	0.08	30	210	14	160	0	DWR
		8-31-61	71	514	8.0	27 1.35	25 2.09	49 2.13	0.7 0.02	0 0.00	282 4.62	35 0.73	6.7 0.19	6.8 0.11	0.6 0.03	0.20	25	315	38	172	0	DWR
Alta Calif. Dairy domestic & industrial	19N/3W-18P1	8-30-61	68	579	8.4	35 1.75	26 2.17	22 2.26	1.1 0.03	4 0.13	268 4.39	50 1.04	22 0.62	7.8 0.12	0.7 0.04	0.24	23	354	36	196	0	DWR
		8-26-61	69	387	7.5	36 1.80	19 1.58	17 0.74	0.7 0.02	0 0.00	213 3.49	20 0.42	8.1 0.23	6.1 0.10	0.2 0.01	0.14	28	240	18	169	0	DWR
H. Perry domestic	-13Q1	8-26-61	70	444	8.4	41 2.04	27 2.22	17 0.74	0.5 0.01	6 0.20	263 4.31	7.7 0.16	7.4 0.21	1.1 0.02	0.3 0.02	0.14	29	266	15	213	0	DWR
		8-26-61	70	451	7.9	45 2.24	21 1.70	16 0.70	1.0 0.02	0 0.00	220 3.60	16 0.33	21 0.59	7.8 0.12	0.2 0.01	0.06	26	262	15	197	17	DWR
F. Reiman irrigation	20N/3W-2D1	8-30-61	74	335	8.2	28 1.40	18 1.44	13 0.56	0.5 0.01	0 0.00	167 2.74	9.5 0.20	4.6 0.13	20 0.32	0.4 0.02	0.07	34	210	16	142	5	DWR
		8-26-61	71	567	7.7	60 2.95	24 2.02	22 0.96	0.9 0.02	0 0.00	296 4.85	22 0.46	21 0.59	6.0 0.10	0.2 0.01	0.32	22	324	16	251	8	DWR
J. Tohomias irrigation	21N/2W-2D1	8-26-61	71	484	8.0	49 2.44	19 1.50	20 0.87	2.8 0.07	0 0.00	219 3.59	17 0.35	28 0.79	10 0.16	0.2 0.01	0.20	30	284	18	201	21	DWR
		8-26-61	68	538	7.7	53 2.64	24 1.90	21 0.91	1.0 0.02	0 0.00	254 4.16	23 0.48	26 0.73	13 0.21	0.2 0.01	0.19	31	317	16	231	23	DWR
I. G. Finch irrigation	-14F1	8-26-61	68	392	8.1	26 1.30	15 1.24	32 1.39	0.9 0.02	0 0.00	184 3.02	8.6 0.18	26 0.73	0.7 0.01	0.2 0.01	0.13	22	222	35	127	0	DWR
		8-30-61	72	357	8.3	21 1.05	16 1.29	27 1.17	0.7 0.02	0 0.00	158 2.59	7.9 0.16	27 0.76	0.8 0.01	0.2 0.01	0.23	27	206	33	117	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).
d. Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
e. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

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						equivalents per million												Total N.C. ppm		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)				Boron (B)	
	MDE&M																			
Baker & McGowan irrigation	22N/1W-29C1	8-25-61	68	497	8.3	47 2.34	23 1.90	21 0.91	0.8 0.02	223 3.65	28 0.58	26 0.73	8.0 0.13	0.2 0.01		0.24	24	18	29	
C. A. Mickel domestic	22N/2W-3A1	8-24-61		509	8.0	45 2.24	21 1.74	25 1.09	0.7 0.02	189 3.10	33 0.69	34 0.96	19 0.31	0.2 0.01		0.20	26	21	14	
Mills Orchard Inc. irrigation	-26B1	8-25-61		538	7.8	58 2.89	22 1.79	22 0.96	0.9 0.02	260 4.26	31 0.64	22 0.62	7.5 0.12	0.1 0.00		0.24	26	17	21	
J. C. Wight domestic	22N/3W-4G1	8-24-61		470	8.3	52 2.59	18 1.47	20 0.87	1.0 0.02	235 3.85	17 0.35	20 0.56	4.8 0.08	0.2 0.01		0.26	19	18	10	
City of Orland municipal	-22Q1	8-30-61	69	422	8.3	48 2.40	14 1.16	18 0.78	0.8 0.02	204 3.34	16 0.33	20 0.56	6.2 0.10	0.2 0.01		0.23	22	18	11	
J. Freitas irrigation	-25B1	8-25-61	68	394	8.2	40 2.00	14 1.20	18 0.78	1.1 0.03	176 2.88	17 0.35	21 0.59	6.8 0.11	0.2 0.01		0.24	40	19	16	
Graves Cemetery irrigation	22N/4W-10B1	8-25-61	70	481	8.4	46 2.30	30 2.50	16 0.70	0.7 0.02	229 3.75	18 0.37	24 0.68	4.7 0.08	0.1 0.00		0.24	28	13	46	
J. Miller domestic	13N/1E-22H1	6-19-61	75	821	8.2	70 3.49	54 4.46	28 1.22	1.3 0.03	415 6.80	52 1.08	32 0.90	21 0.34	0.1 0.01		0.23	47	13	58	
M. V. Doherty domestic	13N/1W-35Q1	6-19-61	70	409	8.3	23 1.15	17 1.43	36 1.57	2.4 0.06	203 3.33	5.6 0.12	24 0.68	2.9 0.05	0.4 0.02		0.36	58	37	0	
Grant	13N/2W-10G1	6-19-61	80	1120	7.3	54 2.69	32 2.64	121 5.26	1.5 0.04	196 3.21	27 0.56	236 6.66	15 0.24	0.3 0.02		2.2	29	49	106	
A. Olivetti irrigation	-10W1	6-19-61	67	612	8.0	25 1.25	17 1.43	77 3.35	1.0 0.02	208 3.41	10 0.21	75 2.12	18 0.29	0.2 0.01		1.2	29	55	0	
Stapp & Co. domestic	14N/1W-2D1	6-19-61	68	1380	8.0	63 3.14	57 4.69	139 6.05	2.5 0.06	284 4.65	136 2.83	230 6.49	8.0 0.13	0.2 0.01		0.22	44	43	159	
H. Charter domestic & irrigation	14N/2W-29V1	7-12-61	72	250	7.8	14 0.70	11 0.94	21 0.91	0.8 0.02	130 2.13	1.8 0.04	6.7 0.19	12 0.19	0.2 0.01		0.06	32	35	0	
Watts Bros. domestic	16N/2W-4H1	6-22-61	67	510	8.1	33 1.65	22 1.77	44 1.91	1.3 0.03	222 3.64	42 0.87	26 0.73	4.5 0.07	0.3 0.01		0.12	37	36	0	
Dr. Libby irrigation	17N/1W-20W1	6-30-61	65	402	7.9	26 1.30	13 1.08	43 1.87	1.6 0.04	232 3.80	0.2 0.00	15 0.42	0.3 0.00	0.1 0.01		0.18	40	44	0	
C. Tuttle domestic	17N/2W-12C1	6-22-61	70	481	8.0	38 1.90	21 1.72	34 1.48	1.2 0.03	260 4.26	7.9 0.16	23 0.65	0.8 0.01	0.1 0.00		0.10	34	29	0	
Maxwell P. U. D. municipal	17N/3W-33R1	6-22-61	70	932	7.9	48 2.40	30 2.48	110 4.78	1.2 0.03	328 5.38	102 2.12	79 2.23	3.4 0.05	0.4 0.02		0.39	49	49	0	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

1961

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents		
																					Total	N.C. ppm	
									BUTTE COUNTY														
J. Davis irrigation	17N/2E-2D1			353	8.5	24 1.20	27 2.26	14 0.61	0.7 0.02	10 0.33	201 3.29	8.0 0.17	5.2 0.15	3.8 0.06	0.2 0.01	0.0	71	15	173	0	DWR		
L. Strenner irrigation	17N/4E-2011	9-7-61		317	8.3	21 1.05	18 1.15	20 0.87	1.2 0.03	2 0.07	143 2.34	21 0.44	7.6 0.42	0.7 0.01	0.1 0.00	0.0	63	26	125	2	DWR		
Butte Farms irrigation	18N/3E-16P2	8-3-61		355	8.4	29 1.45	27 2.23	7.9 0.34	1.4 0.04	6 0.20	192 3.15	29 0.60	2.5 0.07	9.9 0.16	0.0	0.0	81	8	184	17	DWR		
West Coast Orchards irrigation	18N/4E-28M	9-7-61		2,220	8.4	38 1.90	3.2 0.26	436 18.97	2.2 0.06	6 0.20	158 2.59	555 11.56	244 6.88	2.6 0.04	0.8 0.04	0.0	5.6	90	108	0	DWR		
P. Rose domestic	19N/2E-16R1	9-7-61		208	8.2	18 0.90	10 0.82	10 0.44	1.1 0.03	0 0.00	112 1.84	3.0 0.06	6.5 0.18	1.3 0.21	0.2 0.01	0.0	70	20	86	0	DWR		
C. Sprague domestic	21N/1W-26Q1	9-7-61		469	8.3	42 2.10	31 2.52	20 0.87	1.8 0.05	7 0.23	292 4.90	60 0.12	3.2 0.09	0.9 0.01	0.0	0.1	56	16	231	0	DWR		
Yanich domestic and irrigation	21N/2E-30C1	9-7-61		273	8.2	22 1.10	19 1.58	9.0 0.39	0.2 0.01	0 0.00	160 2.62	8.0 0.17	2.5 0.07	8.9 0.14	0.1 0.01	0.0	56	13	134	3	DWR		
S. Hopkins domestic and stock	22N/1E-9M1	9-7-61		414	8.3	35 1.75	27 2.23	15 0.65	0.7 0.02	3 0.10	226 3.70	7.0 0.15	11 0.31	1.5 0.24	0.1 0.01	0.0	65	14	199	9	DWR		
M. Bernes domestic and irrigation	23N/1W-9L1	9-7-61		410	8.0	33 1.65	29 2.11	11 0.48	1.4 0.01	0 0.00	221 3.62	8.0 0.17	6.5 0.18	28 0.45	0.1 0.01	0.0	61	10	203	22	DWR		
									SUTTER COUNTY														
C. Richter domestic	12N/2E-9B2	6-19-61		637	8.2	12 0.60	2.5 0.78	116 5.05	1.0 0.02	0 0.00	265 4.34	17 0.35	64 1.80	0.6 0.01	0.1 0.00	0.1	48	78	69	0	DWR		
Garner domestic	-11W1	6-19-61		1,260	8.1	25 1.21	14 1.19	220 9.57	3.6 0.10	0 0.00	268 4.39	0.0 0.00	270 7.61	1.4 0.02	0.0	0.87	51	79	122	0	DWR		
domestic	-14R1	6-19-61		4,110	8.0	128 0.39	117 9.01	47 23.79	1.7 0.01	0 0.00	200 3.28	0.0 0.00	1,290 36.38	1.3 0.02	0.1 0.00	0.1	21	60	801	637	DWR		
L. Wright domestic	-16R1	6-19-61		865	8.6	23 1.11	13 1.09	160 6.96	3.0 0.08	16 0.53	410 6.72	19 0.40	60 1.69	0.5 0.01	0.1 0.00	0.1	48	75	112	0	DWR		
Havn domestic	-23Q1	6-19-61		940	8.2	13 0.65	10 0.83	172 7.48	2.5 0.06	0 0.00	271 4.44	0.0 0.00	166 4.68	1.1 0.02	0.1 0.00	0.1	42	83	74	0	DWR		

a. Determined by addition of constituents

b. Gravimetric determination

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{0.00}$ except as shown

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1961

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						—equivalents per million												Silica (SiO ₂)	Other constituents		
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-troate (NO ₃)	Fluo-ride (F)	Boron (B)						
						SUTTER COUNTY (cont.)															
D. Mullen domestic	12W/2E-26A1	6-19-61		1,110	8.1	18 0.90	17 1.42	195 8.18	1.7 0.04	282 4.62	0.0 0.00	217 6.12	0.7 0.01	0.0 0.00	0.73	43	632	78	116	0	DMR
T. Fields domestic	13W/3E-10W2	6-16-61		804	8.5	56 2.79	46 3.80	48 2.09	1.2 0.03	356 5.83	24 0.50	69 1.94	6.4 0.10	0.1 0.00	0.13	35	473	24	330	18	DMR
E. Silva irrigation	-11Q3	6-26-61		940	7.9	34 1.70	28 2.28	116 5.05	2.9 0.07	246 4.03	10 0.21	171 4.82	0.7 0.01	0.1 0.00	0.88	35	520	55	199	0	DMR
Boccardo Ranch irrigation	-13C1	6-19-61		399	7.7	18 0.90	3.9 0.32	66 2.87	2.0 0.05	196 3.21	2.1 0.04	28 0.79	0.1 0.00	0.2 0.01	0.52	41	258	69	61	0	DMR
L. Hral irrigation	-16R1	6-16-61		1,370	8.1	86 4.29	72 5.88	78 3.39	1.9 0.05	329 5.39	1.3 0.03	294 8.29	0.7 0.01	0.0 0.00	0.04	33	729	25	509	239	DMR
R. Rouse irrigation	-24D1	6-19-61		3,230	7.7	234 11.88	164 13.49	148 6.44	5.7 0.14	326 5.34	36 0.75	880 24.82	0.0 0.00	0.2 0.01	0.11	35	1,660	20	1,264	993	DMR
C. Owen irrigation	13W/4E-21A1	6-19-61		662	8.1	65 3.24	30 2.51	32 1.39	1.7 0.04	236 3.87	140 2.91	9.3 0.26	0.7 0.01	0.1 0.00	0.09	40	435	19	288	94	DMR
J. Jopson irrigation	-23Q1	6-19-61		224	8.0	14 0.70	4.6 0.38	25 1.09	1.7 0.04	106 1.74	2.1 0.04	17 0.48	0.1 0.00	0.2 0.01	0.15	49	166	49	54	0	DMR
C. Nelson irrigation	13W/5E-7R3	6-19-61		560	7.7	46 2.30	15 1.26	44 1.91	1.7 0.04	170 2.79	58 1.21	45 1.27	1.1 0.04	0.2 0.01	0.20	68	373	35	178	39	DMR
E. Gallagher irrigation	-19R2	6-19-61		251	7.8	22 1.10	9.0 0.74	15 0.65	1.0 0.02	107 1.75	4.3 0.09	21 0.59	2.6 0.04	0.2 0.01	0.06	71	199	26	92	4	DMR
Frye Brothers domestic	14W/1E-1A1	6-19-61		590	8.4	22 1.60	45 3.67	23 1.00	0.8 0.02	222 5.28	20 0.42	13 0.37	3.1 0.05	0.1 0.00	0.11	52	353	16	264	0	DMR
S. McKeenan domestic	-2A1	6-19-61		627	8.0	54 2.69	44 3.64	61 3.64	0.9 0.02	364 5.96	15 0.31	23 0.65	0.6 0.01	0.2 0.01	0.07	52	383	9	317	19	DMR
B. Singh irrigation	14W/3E-3C2	6-6-61		871	8.2	65 3.24	45 3.71	52 2.26	3.7 0.09	344 5.64	31 0.64	100 2.82	0.2 0.00	0.1 0.00	0.21	50	516	24	348	66	DMR
C. Srah irrigation and domestic	-5A3	6-8-61	67	1,110	8.1	78 3.89	64 5.26	74 3.22	1.1 0.03	499 8.18	90 1.87	69 1.94	23 0.37	0.2 0.01	0.13	46	690	26	458	49	DMR
L. Littlejohn irrigation and domestic	-14E2	6-20-61		234	8.0	17 0.85	16 1.31	8.2 0.36	1.4 0.04	143 2.34	5.1 0.11	1.4 0.04	0.5 0.01	0.2 0.01	0.06	44	164	14	108	0	DMR

a. Determined by addition of constituents

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.),

Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown

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						equivalents per million												Total ppm	N.C. ppm			
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Fluo- ride (F)						Boron (B)	Silica (SiO ₂)
						SUTTER COUNTY (cont.)																
J. Blevins domestic	14N/3E-15H1	6-20-61		929	8.4	73 3.64	62 5.07	40 1.74	2.4 0.06	9 0.30	397 6.51	65 1.35	79 2.23	0.6 0.01	0.2 0.01	0.12 0.01	42		16	436	110	DMR
E. Best domestic and irrigation	-16B2	6-20-61		1,710	8.1	126 5.29	102 8.39	71 3.09	2.7 0.07	0 0.00	374 6.13	104 2.16	330 9.31	0.5 0.01	0.2 0.01	0.12 0.01	27		17	735	428	DMR
R. Mahon irrigation	-18M2	6-16-61		669	8.1	57 2.84	35 2.89	42 1.83	1.6 0.04	0 0.00	385 6.31	19 0.40	26 0.73	0.0 0.00	0.1 0.00	0.08 0.00	36		24	287	0	DMR
Sullivan irrigation	-23M2	6-20-61		540	8.1	44 2.20	36 2.97	18 0.78	1.8 0.05	0 0.00	298 4.88	51 1.06	5.9 0.17	0.8 0.01	0.1 0.00	0.09 0.00	43		13	259		DMR
L. Ott irrigation	-28D1	6-16-61		1,100	8.2	75 3.74	60 4.93	60 2.61	1.3 0.03	0 0.00	309 5.06	42 0.87	193 5.44	0.4 0.01	0.0 0.00	0.10 0.00	24		23	434	181	DMR
J. Sager irrigation	-28R1	6-19-61		1,490	8.1	98 4.89	92 7.60	62 2.70	2.6 0.07	0 0.00	383 6.28	7.9 0.16	308 8.88	1.1 0.02	0.0 0.00	0.18 0.00	40		18	625	311	DMR
L. Ott irrigation	-31B1	6-16-61		1,360	7.6	71 3.54	42 3.49	128 5.57	6.1 0.16	0 0.00	226 3.70	3.8 0.08	317 6.94	0.7 0.01	0.1 0.00	0.37 0.00	50		44	352	167	DMR
E. Carrothers domestic	15N/2E-26D2	6-8-61		1,040	8.2	87 4.34	55 4.53	59 2.57	1.3 0.03	0 0.00	429 7.03	37 0.77	82 2.31	73 1.18	0.1 0.00	0.08 0.00	50		22	444	92	DMR
A. Eager irrigation	15N/3E-4C2	6-8-61	65	964	7.9	93 4.64	67 5.55	27 1.17	2.1 0.05	0 0.00	493 8.08	82 1.71	21 0.59	46 0.74	0.1 0.00	0.09 0.00	64		10	510	106	DMR
R. Paillex irrigation	-26M1	6-20-61		411	8.1	22 1.10	18 1.44	40 1.74	2.6 0.07	0 0.00	217 3.56	4.0 0.08	20 0.56	0.5 0.01	0.1 0.00	0.29 0.00	42		40	127	0	DMR
W. Glenteer irrigation	-29G1	6-20-61		716	8.5	56 2.79	50 4.12	32 1.39	1.4 0.04	14 0.47	404 6.82	23 0.48	16 0.45	20 0.32	0.1 0.00	0.10 0.00	43		17	346	15	DMR
Dana Brothers	13N/4E-18H	9-12-61		340	7.9	29 1.45	13 1.09	19 0.83	1.9 0.05	0 0.00	150 2.46	7.1 0.15	27 0.76	0.3 0.00	0.4 0.02	0.04 0.02	45		24	127	4	DMR
City of Wheatland municipal	13N/5E-4B	9-12-61		1,090	7.8	51 2.54	18 1.50	128 5.57	2.0 0.05	0 0.00	111 1.52	19 0.40	266 7.50	1.9 0.03	0.2 0.01	0.54 0.01	64		58	202	111	DMR
E. Anthony domestic	14N/4E-7M1	9-12-61		443	8.1	32 1.60	24 1.94	24 1.04	1.1 0.03	0 0.00	2.0 3.57	1.3 0.40	22 0.32	0.1 0.00	0.2 0.01	0.01 0.01	37		22	177	0	DMR

a Determined by addition of constituents

b Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated

d Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{100}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by			
						equivalents per million												Total ppm	N.C. ppm				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)	Silica (SiO ₂)	Other constituents
						YUBA COUNTY (cont.)																	
F. Hoffman irrigation	14N/4B-22H1	9-12-61		218	7.9	14 0.70	8.0 0.66	18 0.78	1.2 0.03	0 0.00	95 1.56	3.4 0.07	17 0.48	1.3 0.02	0.3 0.02	0.06	70		180	36	68	0	DMR
E. Booth irrigation	14N/5B-15C1	9-12-61		198	7.6	15 0.75	7.4 0.61	13 0.56	1.0 0.02	0 0.00	83 1.36	7.6 0.16	13 0.37	1.6 0.02	0.2 0.01	0.03	74		174	29	68	0	DMR
M. Holmes irrigation	-16C1	9-12-61		158	7.4	11 0.55	7.7 0.63	9.2 0.40	0.4 0.01	0 0.00	72 1.18	3.1 0.06	8.2 0.23	3.5 0.06	0.6 0.03	0.04	62		148	25	59	0	DMR
Waltz Ranch irrigation	-21G	9-12-61		325	7.6	20 1.00	8.0 0.66	28 1.22	1.4 0.04	0 0.00	83 1.36	5.3 0.11	19 1.38	1.6 0.02	0.2 0.01	0.07	70		224	42	83	15	DMR
Lorenzen irrigation	-22H1	9-12-61		462	7.7	29 1.45	9.8 0.81	43 1.87	1.7 0.04	0 0.00	29 1.62	10 0.21	79 2.23	2.0 0.03	0.2 0.01	0.12	70		294	45	113	32	DMR
E. Garcia irrigation	-30J	9-12-61		384	7.9	23 1.15	9.6 0.79	34 1.43	1.6 0.04	0 0.00	99 1.62	5.4 0.11	61 1.72	1.6 0.02	0.3 0.02	0.09	75		260	43	97	16	DMR
Linda Co. Water Dist. municipal	15N/4B-21J	9-8-61	65	329	7.9	25 1.25	20 1.05	12 0.52	1.2 0.03	0 0.00	169 2.77	26 0.54	4.2 0.12	0.2 0.00	0.2 0.01	0.01	45		217	15	145	7	DMR
Linda Co. Water Dist. municipal	-31A	9-13-61		235	8.0	21 1.05	11 0.91	11 0.43	1.1 0.03	0 0.00	139 2.28	1.6 0.03	5.0 0.14	0.0 0.00	0.2 0.01	0.02	38		148	19	98	0	DMR
Beale A.F.B. domestic	15N/5B-19N1	9-12-61		230	7.6	9.2 0.46	9.2 0.76	21 0.91	1.8 0.05	0 0.00	79 1.29	3.3 0.11	26 0.73	1.5 0.02	0.1 0.00	0.07	71		187	42	61	0	DMR
Lafinca Orchards irrigation	16N/3B-11N1	9-12-61		1130	7.9	81 4.04	26 2.15	93 4.04	3.0 0.04	0 0.00	159 2.61	8.6 0.19	272 7.67	0.9 0.01	0.2 0.01	0.49	58		621	39	310	180	DMR
J. Robel domestic	16N/4B-901	9-12-61		179	7.8	13 0.65	7.4 0.61	12 0.52	1.9 0.05	0 0.00	88 1.44	6.9 0.14	8.1 0.23	0.2 0.00	0.2 0.01	0.04	62		155	28	63	0	DMR
						PLACER COUNTY																	
K. Teramoku irrigation	10N/5B-601	8-8-61	67	295	8.1	22 1.10	8.3 0.63	28 1.22	1.1 0.03	0 0.00	139 2.28	2.5 0.05	19 0.54	3.8 0.06	0.3 0.02	0.12	46		199	40	89	0	DMR
A. L. Lampen irrigation and domestic	10N/6B-5C	8-18-61	68	167	7.9	9.2 0.46	7.0 0.58	14 0.61	0.9 0.02	0 0.00	79 1.29	0.8 0.02	8.8 0.25	2.2 0.04	0.4 0.02	0.05	83		165	36	52	0	DMR
R. Dixon irrigation and domestic	100	8-18-61	66	434	8.3	30 1.50	20 1.62	28 1.22	1.6 0.04	0 0.00	195 3.20	6.6 0.14	28 0.79	7.5 0.12	0.3 0.02	0.06	72		297	28	156	0	DMR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c				
						equivalents per million										Silica (SiO ₂)	Other constituents					
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)						Fluo-ride (F)	Boron (B)		
						PLACER COUNTY (Cont.)																
R. Vandergrift Irrigation	11N/5E-6A1	8-8-61	70	225	8.0	15 0.75	7.4 0.51	21 0.91	1.8 0.05	0 0.00	2.8 0.06	1.4 0.39	3.4 0.05	0.3 0.02	0.15	69		188	39	68	0	DWR
P. Minarik Irrigation	-18H1	8-18-61	71	260	8.2	18 0.90	6.8 0.56	27 1.17	2.5 0.06	0 0.00	3.3 0.07	22 0.62	0.9 0.01	0.2 0.01	0.28	67		206	43	73	0	DWR
W. Armstrong Irrigation	-31L1	8-18-61	68	279	8.1	17 0.85	8.4 0.59	30 1.30	1.4 0.04	0 0.00	2.8 0.06	22 0.62	3.1 0.05	0.3 0.02	0.23	60		207	45	77	0	DWR
W. Fiddymont Irrigation	11N/6E-16M1	8-18-61	68	347	7.3	13 0.65	6.0 0.49	44 1.91	1.6 0.04	0 0.00	10 0.21	44 1.24	11 0.13	0.5 0.03	0.06	82		256	62	57	0	DWR
Diamond "K" Ranch Irrigation and stock	-27Q	8-18-61	68	261	7.2	20 1.00	9.1 0.56	19 0.83	1.5 0.04	0 0.00	4.3 0.09	15 0.42	3.1 0.05	0.4 0.02	0.16	86		220	31	90	0	DWR
Sierra View Land Co. Irrigation	-34B	8-18-61	70	267	7.6	19 0.95	11 0.93	20 0.87	1.4 0.04	0 0.00	3.0 0.06	10 0.28	1.1 0.02	0.3 0.02	0.05	85		221	31	94	0	DWR
R. Mariner Irrigation	12N/5E-2B1	8-24-61	68	184	7.9	12 0.60	8.3 0.68	12 0.52	0.8 0.02	0 0.00	2.1 0.04	5.7 0.16	6.9 0.11	0.3 0.02	0.10	69		159	28	64	0	DWR
F. Bonfield Irrigation	-3D	8-24-61	70	216	8.0	11 0.55	7.2 0.59	24 1.04	1.1 0.03	0 0.00	1.5 0.03	15 0.42	0.3 0.00	0.3 0.02	0.28	69		183	47	57	0	DWR
U.S.A.F. Communications Industrial	-23C1	8-25-61	68	222	8.1	12 0.60	5.4 0.44	27 1.17	1.1 0.03	0 0.00	2.8 0.06	14 0.39	7.3 0.12	0.4 0.02	0.23	77		195	52	52	0	DWR
F. Fullerton domestic and Irrigation	12N/6E-16D2	8-18-61	71	695	8.3	18 0.90	14 1.14	106 4.61	1.0 0.02	0 0.00	62 1.29	99 2.79	13 0.21	0.5 0.03	1.3	75		465	69	102	0	DWR
G. Blake domestic	13N/5E-13D	8-18-61	71	529	7.1	21 1.05	10 0.82	62 2.70	1.5 0.04	0 0.00	4.6 0.96	83 2.34	2.3 0.04	0.4 0.02	0.16	72		347	58	94	26	DWR
W. Brown Irrigation	-24P1	8-24-61	68	256	7.9	14 0.70	8.5 0.70	24 1.04	0.9 0.02	0 0.00	6.9 0.14	19 0.54	1.3 0.02	0.3 0.02	0.20	68		194	42	70	0	DWR
H. Porter Irrigation and domestic	13N/6E-6D	8-24-61	66	118	7.2	5.4 0.27	1.3 0.11	18 0.78	0.8 0.02	0 0.00	3.8 0.13	4.6 0.08	4.9 0.02	0.4	0.06	65		130	66	19	0	DWR
L. Gunther Irrigation and domestic	-16D	8-18-61	73	138	6.9	7.8 0.39	4.7 0.39	12 0.52	0.8 0.02	0 0.00	7.2 0.15	5.1 0.14	7.0 0.11	0.3 0.02	0.07	49		120	39	39	0	DWR
L. Franceschi Irrigation	-33C1	8-24-61	65	682	8.0	27 1.35	18 1.51	82 3.57	0.8 0.02	0 0.00	38 0.79	98 2.76	1.9 0.03	0.4 0.02	2.5	49		404	55	143	0	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

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1961

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents
Hollenbeck domestic T. Sakata domestic	6N/3E-25A1	8-1-61	72	469	8.2	14 0.70	2.2 0.13	95 4.13	1.7 0.04	0	228 3.74	24 0.50	27 0.76	0.2 0.00	0.1 0.00	0.98	32	82	44	0	DWR
	-25A2	8-11-61	70	560	8.0	16 0.80	1.5 1.26	85 3.70	2.0 0.05	0	240 3.93	24 0.50	53 1.49	0.3 0.00	0.2 0.01	1.0	40	64	103	0	DWR
	7N/3E-5U1	7-27-61	75	727	8.4	26 1.30	61 5.01	51 2.22	1.3 0.03	14 0.47	410 6.72	33 0.69	22 0.62	6.4 0.10	0.2 0.01	0.76	31	26	316	0	DWR
Glide Ranch domestic and stock Unul domestic	-31U1	7-27-61	81	958	8.3	41 2.04	73 6.01	75 3.26	1.1 0.03	0	551 9.03	50 1.04	34 0.96	23 0.37	0.2 0.01	1.0	34	29	403	0	DWR
	Anderson & Seibring domestic	8-11-61	69	1900	7.8	72 3.59	15 1.23	312 13.57	8.1 0.21	0	232 3.80	0.3 0.01	503 14.18	0.7 0.01	0.2 0.01	2.3	48	73	241	51	DWR
	8N/1E-9E1	7-28-61	71	624	8.0	33 1.65	39 3.23	49 2.13	2.4 0.00	0	315 5.16	39 0.81	30 0.85	6.2 0.10	0.3 0.02	0.53	39	30	244	0	DWR
Willowbank Corp. domestic and irrigation B. Howatt irrigation	8N/2E-13F2	7-27-61	74	637	8.2	28 1.40	49 4.07	47 2.04	1.0 0.02	0	382 6.26	29 0.60	18 0.51	3.4 0.05	0.4 0.02	0.50	37	27	274	0	DWR
	8N/3E-5P1	7-27-61	74	895	8.2	31 1.55	51 4.20	99 4.31	2.4 0.00	0	420 6.83	78 1.62	55 1.55	3.3 0.05	0.2 0.01	1.5	40	42	288	0	DWR
	-5Q1	7-27-61	69	718	8.2	25 1.25	42 3.47	75 3.26	2.1 0.05	0	349 5.72	47 0.93	46 1.30	1.6 0.02	0.3 0.02	1.0	44	40	236	0	DWR
W. Hamel irrigation Wilber domestic	-19D1	7-27-61	70	1010	7.9	47 2.34	83 6.81	71 3.09	1.2 0.03	0	549 9.00	77 1.60	43 1.21	12 0.19	0.4 0.02	0.70	39	25	258	8	DWR
	-19M2	7-27-61	80	1600	8.4	57 2.84	151 12.40	114 4.96	1.2 0.03	19 0.63	892 14.62	113 2.35	60 1.69	55 0.89	0.3 0.02	1.8	40	24	763	0	DWR
	8N/4E-3B1	8-11-61	82	769	8.1	80 3.99	5.2 0.43	64 2.78	5.5 0.14	0	174 2.85	0.0 0.00	164 4.62	0.4 0.01	0.0 0.00	0.31	50	38	221	78	DWR
Rice Growers Assoc. industrial irrigation	8N/1W-13G1	8-9-61	71	713	8.2	83 4.39	15 1.26	54 2.35	0.8 0.02	0	358 5.87	41 0.85	43 1.21	6.3 0.10	0.4 0.02	0.57	37	29	283	0	DWR
	Dumars irrigation	8-3-61	71	859	8.2	101 5.04	22 1.81	63 2.74	1.0 0.02	0	328 5.52	41 0.85	76 2.14	7.1 0.11	0.2 0.01	1.7	32	28	343	17	DWR
	T. Barrios irrigation	8-11-61	70	891	8.2	120 5.99	4.6 0.38	81 3.52	1.2 0.03	0	427 7.16	39 0.81	64 1.80	18 0.29	0.2 0.01	2.6	27	35	319	0	DWR
R. Stadtmueller irrigation	-10D1	7-21-61	70	1130	8.2	50 2.50	78 6.39	101 4.39	1.0 0.02	0	603 9.88	42 0.87	80 2.26	13 0.21	0.6 0.03	3.0	29	33	445	0	DWR

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b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (O.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

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1961

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm		
E. Chiles domestic & irrigation	9N/2E-35D1	7-27-61	70	843	8.2	33	60	72	0.9	0	393	50	72	4.0	0.5	1.3	33	520	32	328	6	DWR			
						1.65	4.90	3.13	0.02	0.00	6.44	1.04	2.03	0.06	0.03										
Woodland Farms domestic	9N/3E-7D1	8-9-61	74	560	8.1	79	4.9	40	1.5	0	288	16	39	2.5	0.1	1.8	24	351	28	217	0	DWR			
						3.94	0.40	1.74	0.04	0.00	4.72	0.33	1.10	0.04	0.00										
Fallor domestic	9N/4E-33L1	8-11-61	76	1540	7.9	78	25	202	5.0	0	236	1.5	381	0.4	0.0	1.8	42	853	59	298	104	DWR			
						3.89	2.06	8.79	0.13	0.00	3.87	0.03	10.74	0.01	0.00										
Dumars domestic	9N/1W-16H1	7-28-61	70	803	8.0	71	25	66	0.9	0	338	42	75	4.8	0.6	0.51	29	481	34	281	4	DWR			
						3.54	2.07	2.87	0.02	0.00	5.54	0.87	2.12	0.03	0.03										
Chapman Bros. irrigation	-30L1	7-24-61	71	811	8.1	57	34	74	1.0	0	312	63	73	14	0.4	0.89	30	500	36	282	26	DWR			
						2.84	2.79	3.22	0.02	0.00	5.11	1.31	2.06	0.22	0.02										
Scarlett & Owens irrigation	10N/1E-1C1	7-26-61	70	767	8.0	57	44	48	1.8	0	372	26	58	12	0.2	2.1	23	455	24	324	19	DWR			
						2.84	3.63	2.09	0.05	0.00	6.10	0.54	1.64	0.19	0.01										
N. Corcoran domestic	-15G1	8-9-61	78	891	8.3	89	23	90	0.5	0	436	71	55	4.4	0.6	1.3	30	585	38	319	0	DWR			
						4.14	1.93	3.92	0.01	0.00	7.15	1.48	1.55	0.07	0.03										
A. Summ irrigation	-26A	8-10-61	68	665	8.1	88	12	44	2.1	0	327	26	50	4.1	0.1	2.1	15	406	26	271	9	DWR			
						4.39	1.02	1.91	0.02	0.00	5.36	0.54	1.41	0.07	0.00										
W. Love domestic	10N/2E-1Q1	7-26-61	71	2580	7.8	172	153	194	3.8	0	509	381	470	2.7	0.1	6.9	27	1660	29	1060	643	DWR			
						8.58	12.70	8.53	0.10	0.00	8.34	7.93	13.25	0.04	0.00										
Spreckles Sugar Industrial	-16B1	8-3-61	70	906	8.3	104	29	61	2.2	0	472	37	60	15	0.2	3.0	21	566	25	386	0	DWR			
						5.29	2.42	2.65	0.06	0.00	7.74	0.77	1.69	0.24	0.01										
City of Woodland domestic	-27H1	8-3-61	74	584	8.3	66	13	47	2.2	0	275	16	53	1.2	0.0	2.0	27	362	31	219	0	DWR			
						3.29	1.09	2.04	0.06	0.00	4.51	0.33	1.49	0.02	0.00										
Clark Davis irrigation	10N/1W-4B1	7-24-61	70	540	8.3	31	32	46	0.9	0	318	14	20	3.8	0.5	0.41	37	342	32	209	0	DWR			
						1.55	2.63	2.00	0.02	0.00	5.21	0.29	0.56	0.06	0.03										
Ferro and Ganepa irrigation	-36K2	7-24-61	70	1460	8.1	88	59	141	2.8	0	493	122	166	5.5	0.2	5.3	21	853	40	463	59	DWR			
						4.39	4.36	6.13	0.07	0.00	8.08	2.54	4.68	0.09	0.01										
J. Monroe irrigation	10N/2W-14A1	7-20-61	71	446	8.2	30	24	37	1.0	0	269	12	10	8.5	0.4	0.24	28	283	32	172		DWR			
						1.50	1.94	1.61	0.02	0.00	4.41	0.25	0.28	0.14	0.02										
J. Peterson domestic and irrigation	-16L1	7-20-61	72	1200	7.9	69	46	142	1.3	0	607	46	90	13	0.7	2.2	24	732	46	363	0	DWR			
						3.14	3.81	6.18	0.03	0.00	9.95	0.96	2.54	0.21	0.04										

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b. Gravimetric determination.

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d. Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated

e. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown

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						equivalents per million												Total ppm	N.C. ppm		
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)						Boron (B)
										YOLO COUNTY (cont.)											
Howard stock	10N/2W-17J1	7-20-61	74	701	7.9	14 0.70	8.8 0.72	139 6.05	1.7 0.04	307 5.03	35 0.73	63 1.78	2.5 0.04	0.5 0.03	0.16 0.02	0.76 0.30	30	80	71	0	DMR
Myrtle Brothers domestic	-10F1	7-20-61	78	1540	8.0	72 3.59	31 2.58	231 10.05	0.5 0.01	447 7.33	63 1.31	254 7.16	15 0.24	1.0 0.05	1.0 0.05	1.0 0.49	49	62	309	0	DMR
W. McClary domestic and irrigation	-10F2	7-20-61	73	1650	7.9	143 7.14	52 4.25	148 6.44	1.4 0.04	402 6.50	205 4.27	255 7.19	10 0.16	0.4 0.02	1.2 0.02	1.2 0.34	34	36	570	240	DMR
C. Kuteuris domestic	-23A1	7-20-61	80	485	8.0	39 1.95	22 1.79	41 1.78	1.1 0.03	294 4.82	12 0.25	10 0.28	7.6 0.12	0.3 0.02	0.56 0.02	29	32	187	0	DMR	
V. White domestic	-18L1	7-20-61	80	1390	7.5	105 5.24	50 4.13	136 5.92	0.8 0.02	458 7.51	179 3.73	148 4.17	6.3 0.10	0.5 0.03	1.7 0.03	21	39	469	93	DMR	
D. Schlissor domestic	11N/1E-4R	8-3-61	78	931	8.3	27 1.35	47 3.84	127 5.52	1.4 0.04	515 8.44	54 1.12	44 1.24	0.7 0.01	0.6 0.03	3.2 0.03	31	51	260	0	DMR	
J. Slaven irrigation	-17M	8-9-61	71	506	8.2	74 3.69	6.7 0.55	35 1.52	1.2 0.03	326 5.34	8.2 0.17	10 0.28	3.6 0.06	0.1 0.00	0.67 0.00	35	26	212	0	DMR	
D. Miller domestic	11N/2E-22A1	7-26-61	73	1760	8.1	54 2.69	80 6.54	238 10.35	2.2 0.06	620 10.16	154 3.21	208 5.86	16 0.26	0.2 0.01	6.9 0.01	36	53	462	0	DMR	
W. Kimmelhue and Son irrigation	-32G	8-9-61	70	630	8.2	81 4.04	2.0 0.74	51 2.22	1.7 0.04	325 5.33	21 0.44	42 1.18	3.0 0.05	0.1 0.00	1.9 0.00	25	32	239	0	DMR	
O. Duret domestic	11N/2W-35J1	7-20-61	73	524	8.1	43 2.14	26 2.13	36 1.57	1.0 0.02	288 4.72	15 0.31	12 0.34	26 0.42	0.5 0.03	0.21 0.03	27	26	216	0	DMR	
R. Bloom domestic and irrigation	11N/3W-9Q1	8-2-61	78	684	7.5	58 2.89	28 2.34	43 1.87	0.9 0.02	236 3.87	40 0.83	77 2.17	7.2 0.12	0.2 0.01	0.38 0.01	27	26	262	68	DMR	
H. Everett irrigation	-10E2	7-20-61	73	892	8.2	26 1.30	3.6 0.30	176 7.66	1.0 0.02	327 5.36	86 1.79	80 2.26	1.1 0.02	0.4 0.00	3.4 0.02	31	82	80	0	DMR	
Brooks irrigation	-26M3	7-20-61	70	799	7.5	74 3.69	38 3.14	47 2.04	0.7 0.02	371 6.03	35 0.73	65 1.83	4.5 0.07	0.2 0.01	1.0 0.01	30	23	342	28	DMR	
Southern Pacific R.R. domestic	12N/1W-15N2	8-3-61	84	515	8.2	86 4.29	8.6 0.71	17 0.74	0.7 0.02	274 4.19	5.1 0.11	24 0.68	26 0.42	0.0 0.00	0.12 0.00	30	13	250	25	DMR	
M. Dobbins domestic	12N/2W-2A1	8-3-61	74	763	8.1	56 2.79	37 3.04	57 2.43	0.9 0.02	369 6.05	5.3 0.11	67 1.89	14 0.22	0.1 0.00	0.67 0.00	29	30	292	0	DMR	

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b. Gravimetric determination.

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						equivalents per million												Total ppm	N.C. ppm		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)
SACRAMENTO COUNTY																					
Reclamation District 3 domestic	4N/3E-14F1	8-31-61	68	867	8.1	14 0.70	9.2 0.76	160 6.96	1.6 0.04	0	335 3.49	28 0.35	98 2.76	0.3 0.00	0.1 0.00	1.5	26	As 0.01 Zn 0.20	Fe 0.12	0	DWR
	-21G	8-31-61	68	170	7.8	11 0.55	6.0 0.49	14 0.61	2.0 0.05	0	79 1.29	8.4 0.17	7.3 0.20	1.4 0.02	0.2 0.01	0.08	20	Al 0.01 Mn 1.0 Zn 0.02	Pb 0.02 Fe 5.5	0	DWR
	-22L1	9-13-61	66	138	7.4	7.3 0.36	5.1 0.42	12 0.52	1.6 0.04	0	98 0.95	8.6 0.18	6.8 0.19	0.7 0.01	0.0	0.10	30	Fe 5.8 Zn 0.02	Mn 0.61	0	DWR
I. Craven spring	-22L2	8-31-61	66	148	7.8	8.5 0.42	6.1 0.50	12 0.52	1.9 0.05	0	64 1.05	8.6 0.18	6.5 0.18	1.2 0.02	0.1 0.00	0.07	30	Al 0.02 Mn 0.67 Zn 0.03	Fe 3.1	0	DWR
	-22Q	9-13-61		219	7.8	5.0 0.25	3.0 0.25	39 1.70	0.9 0.02	0	105 1.72	9.9 0.21	10 0.28	0.5 0.01	0.2 0.01	0.12	36	Al 0.02 Cu 0.01 Zn 1.1	As 0.02 Fe 1.6	0	DWR
W. Langheart drainage	-23G1	8-31-61	66	487	7.8	37 1.85	22 1.79	37 1.61	4.0 0.10	0	267 4.38	1.2 0.02	24 0.78	4.6 0.07	0.9 0.05	0.27	56	As 0.03 Fe 3.2 Mn 0.42 Zn 0.01	Cu 0.01 Pb 0.01	0	DWR
J. Borba irrigation	4N/4E-18J	7-12-61		1320	8.5	63 3.39	78 6.42	123 5.35	3.0 0.08	18 0.60	554 9.08	6.1 0.13	180 5.08	8.9 0.14	0.2 0.01	0.41	62	Al 0.02 Fe 0.43 Zn 0.01	As 0.03	7	DWR
H. Alberg irrigation	5N/5E-3F1	10-3-61		282	8.1	21 1.05	12 0.99	21 0.91	1.4 0.04	0	170 2.79	2.1 0.04	6.0 0.17	0.0 0.00	0.2 0.01	0.05	48			0	DWR
H. Douglas irrigation and domestic	5N/7E-7E2	8-24-61		188	8.0	14 0.70	5.6 0.46	15 0.65	1.7 0.04	0	86 1.41	1.3 0.03	10 0.28	7.6 0.12	0.2 0.01	0.08	80			0	DWR
Hart Ranch irrigation	6N/6E-23J1	9-15-61	66	229	8.6	16 0.80	9.2 0.76	16 0.70	1.5 0.04	5 0.17	106 1.74	1.8 0.04	10 0.28	5.4 0.09	0.3 0.02	0.06	72			0	DWR
R. Whittemore irrigation	6N/7E-23A1	7-13-61	55	400	7.8	12 0.60	7.8 0.64	57 2.43	5.1 0.13	0	75 1.23	10.1 2.10	15 0.42	2.1 0.03	0.3 0.02	0.17	88			0	DWR
F. Ovesto domestic	6N/8E-15J1	7-13-61	50	152	7.7	11 0.55	5.7 0.47	7.4 0.32	2.8 0.07	0	56 0.92	3.3 0.07	8.9 0.25	10 0.16	0.3 0.02	0.04	21			5	DWR
M. Perry	7N/4E-4F1	8-17-61	59	194	8.0	16 0.80	11 0.88	7.7 0.33	2.1 0.05	0	111 1.82	1.0 0.02	5.3 0.15	0.6 0.01	0.1 0.00	0.04	34			0	DWR
Department of Public Works domestic	7N/5E-7C1	8-30-61	67	237	8.1	17 0.85	9.6 0.79	16 0.70	2.1 0.05	0	122 2.00	0.6 0.01	12 0.34	0.3 0.00	0.2 0.01	0.03	41			0	DWR

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Total ppm		N.C. ppm		
										SACRAMENTO COUNTY (cont.)													
H. Sutter Irrigation	7N/5E-32J2	9-12-61	68	307	8.2	24 1.20	14 1.13	20 0.87	1.9 0.05	0 0.00	174 2.85	2.0 0.04	10 0.28	5.0 0.03	0.2 0.01	0.08	59	222	26	119	0	DWR	
W. Mosser domestic and irrigation	7N/6E-22R1	9-12-61	66	223	8.5	16 0.80	10 0.32	14 0.61	1.5 0.04	3 0.10	115 1.88	2.6 0.05	6.5 0.18	2.2 0.04	0.3 0.02	0.03	79	192	27	81	0	DWR	
G. Rothfelden Irrigation	7N/7E-27B1	8-24-61		300	8.2	25 1.25	15 1.27	13 0.56	1.4 0.04	0 0.00	152 2.49	0.2 0.00	17 0.48	8.2 0.13	0.2 0.01	0.02	62	217	18	126	1	DWR	
Land Park Water Maintenance District municipal	8N/4E-26D1	8-10-61	69	352	8.3	32 1.60	16 1.36	13 0.56	3.4 0.09	0 0.00	170 2.79	4.1 0.08	23 0.65	2.5 0.04	0.2 0.01	0.09	49	227	16	148	9	DWR	
Department of Public Works domestic	8N/5E-15H1	9-12-61	66	397	8.3	45 2.24	12 1.02	15 0.65	4.5 0.12	0 0.00	185 3.03	3.8 0.08	32 0.90	0.4 0.01	0.1 0.00	0.03	53	257	16	163	11	DWR	
F. Umada domestic and irrigation	8N/6E-21N1	9-12-61	67	157	7.9	15 0.75	4.5 0.37	9.2 0.40	1.6 0.04	0 0.00	80 1.31	1.3 0.03	4.6 0.13	4.0 0.06	0.2 0.01	0.04	64	143	26	56	0	DWR	
E. Pilliken domestic	8N/8E-29K1	8-25-61		197	7.7	13 0.65	5.2 0.43	15 0.65	1.0 0.02	0 0.00	41 0.67	34 0.71	14 0.39	0.4 0.01	0.3 0.02	0.03	64	167	37	54	20	DWR	
Hoffart Irrigation	9N/4E-19L1	8-11-61	68	448	8.0	31 1.55	22 1.85	25 1.09	1.9 0.05	0 0.00	193 3.16	11 0.23	37 1.04	3.6 0.06	0.2 0.01	0.11	62	289	24	170	12	DWR	
K. Kimura Irrigation	-8L1	8-2-61	62	920	8.5	22 1.10	50 4.13	97 4.22	2.3 0.06	8 0.27	252 4.13	108 2.24	103 2.90	8.2 0.13	0.1 0.00	0.40	42	564	44	262	43	DWR	
L. Swalley Irrigation	-27F1	9-7-61	61	785	8.2	46 2.30	19 1.58	82 3.57	4.1 0.10	0 0.00	216 3.54	0.0 0.00	143 4.03	0.6 0.01	0.1 0.00	0.41	45	446	47	194	17	DWR	
Citizens Utility Company domestic	9N/5E-21E1	9-13-61	72	382	8.0	22 1.10	13 1.04	33 1.44	3.1 0.08	0 0.00	134 2.20	4.6 0.10	47 1.32	0.2 0.00	0.2 0.01	0.26	76	265	39	107	0	DWR	
Air Products Inc. domestic and industrial	9N/7E-21D1	8-24-61		328	7.2	31 1.55	13 1.05	13 0.56	4.8 0.12	0 0.00	164 2.69	12 0.25	9.9 0.28	2.2 0.04	0.2 0.01	0.03	65	232	17	130	0	DWR	
F. E. Olson domestic	-26H1	8-24-61		126	6.6	10 0.50	3.6 0.30	7.4 0.32	0.7 0.02	0 0.00	41 0.67	5.6 0.12	5.4 0.15	1.0 0.01	0.2 0.01	0.02	62	125	28	40	6	DWR	
Aerojet General Corp. Industrial	-28K1	8-16-61		241	7.1	20 1.00	9.7 0.80	14 0.61	2.2 0.06	0 0.00	135 2.21	1.6 0.03	5.7 0.16	1.3 0.02	0.2 0.01	0.02	73	194	25	90	0	DWR	

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San Joaquin County Highway Department California Water Service municipal Fibreboard Products Company industrial California Water Service municipal industrial R. Duarte Irrigation Slang Irrigation California Water Service Linden Water Service domestic F. DeBenedetti Irrigation and domestic P. Lafferty domestic O. Gallagher domestic Jahant Ranch domestic and stock D. Pritchard domestic and irrigation A. Sims Irrigation	1N/4E-3N1	7-26-61	69	1210	7.8	43 2.14	26 1.10	128 5.61	2.5 0.06	0 0.00	503 2.24	7.6 0.16	161 4.54	3.1 0.05	0.2 0.01	0.13	57	746	67	212	0	DWR
	1N/6E-4D1	7-25-61	71	576	8.2	10 0.50	4.9 0.40	113 4.92	1.3 0.03	0 0.00	209 3.42	0.0 0.00	83 2.34	0.3 0.00	0.2 0.01	0.63	61	377	84	45	0	DWR
	-10P1	7-17-61	73	2770	7.4	114 5.69	55 4.52	371 16.14	4.0 0.10	0 0.00	154 2.52	0.0 0.00	858 24.20	1.0 0.02	0.2 0.01	0.82	55	1540	61	511	385	DWR
	-14H1	7-26-61	72	450	8.2	9.6 0.43	3.6 0.30	85 3.70	1.1 0.03	0 0.00	184 3.02	0.2 0.00	23 1.49	0.0 0.00	0.2 0.01	0.73	64	307	82	39	0	DWR
	1N/7E-11J1	8-2-61	66	245	8.2	22 1.10	8.3 0.33	16 0.70	3.4 0.09	0 0.00	128 2.10	2.8 0.06	2.0 0.25	4.3 0.07	0.2 0.01	0.05	70	199	27	89	0	DWR
	-12C1	8-8-61	66	286	8.3	27 1.35	11 0.89	17 0.74	4.1 0.10	0 0.00	155 2.54	5.1 0.11	11 0.31	3.0 0.05	0.2 0.01	0.06	62	223	24	112	0	DWR
	1N/9E-18C1	7-26-61	68	188	7.9	14 0.70	6.8 0.56	12 0.52	2.6 0.07	0 0.00	82 1.34	1.2 0.02	8.8 0.25	1.0 0.16	0.3 0.02	0.06	78	174	28	63	0	DWR
	2N/6E-27L1	7-27-61	66	336	8.3	29 1.45	8.6 0.71	32 1.39	3.8 0.10	0 0.00	191 3.13	1.3 0.27	8.3 0.23	1.0 0.02	0.4 0.02	1.9	24	216	38	108	0	DWR
	2N/8E-15L1	7-26-61	67	109	8.0	20 1.00	7.8 0.54	9.8 0.43	4.7 0.12	0 0.00	117 1.92	2.3 0.05	3.2 0.09	3.6 0.06	0.2 0.01	0.03	68	178	20	82	0	DWR
	2N/9E-7C1	7-26-61	61	253	8.2	29 1.45	9.1 0.75	10 0.44	3.5 0.09	0 0.00	135 2.21	9.7 0.20	5.8 0.16	2.7 0.04	0.2 0.01	0.03	60	196	16	110	0	DWR
	4N/4E-14C1	8-5-61	80	994	8.1	19 0.95	2.1 0.17	195 8.48	1.4 0.04	0 0.00	229 3.75	0.0 0.00	207 5.84	1.0 0.02	0.1 0.02	1.5	30	569	88	56	0	DWR
	4N/5E-8H1	8-5-61	66	4830	7.8	257 12.02	228 16.75	103 17.75	2.5 0.06	0 0.00	311 5.10	0.0 0.00	1540 43.43	0.1 0.00	0.2 0.01	0.48	33	2620	36	1580	1325	DWR
	4N/6E-11P1	8-1-61	68	228	6.2	19 0.95	8.9 0.73	13 0.56	3.2 0.08	0 0.00	119 1.95	6.2 0.13	6.3 0.18	1.0 0.02	0.2 0.01	0.54	69	185	24	84	0	DWR
	1N/7E-23B2	8-1-61	68	515	7.7	10 2.00	22 1.34	33 1.44	1.7 0.04	0 0.00	214 3.51	7.1 0.15	46 1.30	1.0 0.16	0.2 0.01	0.30	75	340	27	192	17	DWR
	5N/8E-3L1	8-8-61	69	176	8.0	13 0.55	6.0 0.49	13 0.56	2.2 0.07	0 0.00	89 1.44	2.8 0.06	5.6 0.16	3.8 0.06	0.3 0.02	0.04	86	177	32	57	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), and Chromium (Cr).

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a. Determined by addition of constituents

c Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.),

Figure 1. The effect of the number of nodes (n) on the performance of the proposed algorithm. The figure shows two plots side-by-side. The left plot shows the execution time (in seconds) on the y-axis (ranging from 0 to 10) versus the number of nodes (n) on the x-axis (ranging from 10 to 100). The right plot shows the accuracy (in percentage) on the y-axis (ranging from 90 to 100) versus the number of nodes (n) on the x-axis (ranging from 10 to 100). Both plots show a decreasing trend as the number of nodes increases.

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c
						equivalents per million												Silica (SiO ₂)	Other constituents	
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)					
Banta-Carbene I. D. Irrigation J. Hamilton Irrigation	3S/6B-7F1	8-7-61	66	1800	8.0	8.9 4.44	55 4.51	220 9.57	2.6 0.07	0 0.00	305 5.00	203 4.23	322 9.08	17 0.27	0.3 0.02	1.4	41	448	193	DWR
	-22Q1	8-7-61	72	638	8.2	52 2.59	15 1.25	62 2.70	1.8 0.05	0 0.00	190 3.11	117 2.44	34 0.96	11 0.18	0.1 0.00	0.62	26	192	36	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{100}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per-cent sodium	Hardness as CaCO ₃		Analyzed by				
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-t-rite (NO ₃)	Fluo-ride (F)			Boron (B)	Silico (SiO ₂)		Other constituents	Total ppm	N.C. ppm	
	MOB&K																							
A. Groves domestic and irrigation	1N/10E-17G	9-8-61		264	7.9	22 1.10	10 0.86	15 0.55	2.3 0.06	0 0.00	122 2.00	5.8 0.12	14 0.39	7.5 0.12	0.2 0.01	0.14	55			192	24	98	0	DWR
J. Dunn irrigation	1S/10E-33R1	8-30-61		222	7.6	16 0.80	8.3 0.68	14 0.61	3.4 0.09	0 0.00	89 1.16	11 0.23	12 0.34	6.0 0.10	0.3 0.02	0.11	72			194	28	74	1	DWR
J. Demarini irrigation	1S/11E-36E1	8-16-61		303	8.2	27 1.35	12 0.99	17 0.74	1.4 0.04	0 0.00	143 2.34	18 0.37	2.3 0.28	1.6 0.03	0.0 0.00	0.0	66			223	24	117	0	DWR
A. Ramirez domestic and irrigation	2S/10E-1001	8-30-61		138	7.5	12 0.60	5.6 0.46	6.4 0.28	2.8 0.07	0 0.00	75 1.23	5.1 0.11	1.6 0.04	2.9 0.05	0.2 0.01	0.05	60			134	20	53	0	DWR
Oakdale Land Company irrigation	-27G1	9-16-61		65	-	5.6 0.28	2.9 0.74	2.1 0.09	0.6 0.02	0 0.00	24 0.56	2.0 0.06	1.8 0.05	0.0 0.00	0.2 0.01	0.0	11			44	14	26	0	DWR
F. Giambanco industrial and domestic	-36N1	8-16-61		352	8.3	38 1.90	9.1 0.75	20 0.87	2.5 0.06	3 0.10	134 2.20	6.0 0.12	30 0.85	7.9 0.13	0.2 0.01	0.0	43			226	24	133	18	DWR
Modesto Irrigation District #102 irrigation and domestic	3S/7E-24J1	7-28-61	68	672	7.7	54 2.69	19 1.53	69 3.00	2.4 0.06	0 0.00	377 6.18	16 0.33	18 0.51	13 0.21	0.1 0.00	0.17	52			429	41	211	0	DWR
R. Haynes domestic	-33C1	8-2-61		1,040	7.9	48 2.40	23 1.90	133 5.79	1.8 0.05	0 0.00	215 3.52	19 0.40	213 6.01	1.6 0.03	0.0 0.00	0.0	21			567	57	215	39	DWR
Modesto Irrigation District #82 irrigation and stock	3S/8E-6N1	7-28-61	66	648	7.7	62 3.09	20 1.61	51 2.22	3.8 0.10	0 0.00	353 5.78	12 0.25	24 0.68	10 0.16	0.1 0.00	0.14	55			412	32	235	0	DWR
Modesto Irrigation District #26 irrigation	-9C1	7-28-61	67	437	7.9	45 2.24	14 1.20	24 1.04	3.6 0.09	0 0.00	229 3.75	9.7 0.20	9.3 0.28	18 0.29	0.1 0.00	0.10	57			293	23	172	0	DWR
Modesto Irrigation District #37 irrigation	-20J1	7-28-61	66	560	7.8	65 3.24	15 1.24	33 1.44	1.9 0.05	0 0.00	275 4.51	13 0.27	16 0.45	35 0.56	0.1 0.00	0.10	53			367	24	224	0	DWR
Modesto Irrigation District #39 irrigation	-23E1	7-28-61	67	533	8.0	63 3.14	13 1.06	31 1.35	2.6 0.07	0 0.00	253 4.15	20 0.42	16 0.45	32 0.52	0.1 0.00	0.13	52			354	24	210	3	DWR

a. Determined by addition of constituents

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL), or State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

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a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (Q.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

1961

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in ————— parts per million —————										Total dissolved solids in ppm	Per- cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
						STANISLAUS COUNTY (Cont.)																	
R. Davis Irrigation and domestic	5S/9E-27N1	7-31-61		1,340	8.3	98	51	118	1.8	6	183	462	43	7.4	0.2	0.4	27		905	456	296	DWR	
						4.90	4.23	5.13	0.05	0.20	3.00	9.62	1.21	0.12	0.01								
Turlock Irrigation District #97 drainage	5S/9E-9A1	8-21-61	65	495	8.2	27	15	53	1.3	0	257	11	25	10	0.2	0.1	27		337	153	0	DWR	
						1.85	1.20	2.31	0.03	0.00	4.21	0.23	0.71	0.16	0.01								
Turlock Irrigation District #56 irrigation and drainage	-1301	8-21-61	65	573	8.0	52	17	50	2.2	0	298	9.0	28	14	0.1	0.1	25		374	199	0	DWR	
						2.59	1.39	2.18	0.06	0.00	4.88	0.19	0.79	0.23	0.01								
Turlock Irrigation District #116 drainage	5S/10E-4F1	8-21-61	66	475	8.5	42	14	40	2.1	10	207	15	20	29	0.2	0.1	67		341	164	0	DWR	
						2.10	1.18	1.74	0.05	0.33	3.39	0.31	0.56	0.47	0.01								
Turlock Irrigation District #94 drainage	-28H1	8-16-61	66	384	8.4	21	91	40	2.0	6	177	10	17	13	0.2	0.0	51		266	115	0	DWR	
						1.55	0.75	1.74	0.05	0.20	2.90	0.21	0.48	0.21	0.01								
Turlock Irrigation District #126 drainage	-30F1	8-16-61	65	814	8.1	41	17	116	2.0	0	332	60	45	30	0.2	0.1	56		531	171	0	DWR	
						2.05	1.36	5.05	0.05	0.00	5.44	1.25	1.27	0.48	0.01								
Turlock Irrigation District #129 irrigation and drainage	5S/11E-7F1	8-17-61	65	507	8.2	53	16	22	1.4	0	234	24	13	42	0.2	0.1	70		367	193	6	DWR	
						2.64	1.32	1.39	0.04	0.00	3.84	0.50	0.37	0.69	0.01								
R. Perkins Irrigation	5S/12E-601	8-3-61		261	8.1	20	6.6	24	1.4	0	105	3.0	16	16	0.2	0.2	54		193	77	0	DWR	
						1.00	0.54	1.04	0.04	0.00	1.72	0.06	0.45	0.26	0.01								
J. W. Campbell Irrigation	6S/9E-18F1	7-6-61		612	7.7	54	27	41	1.6	0	270	93	14	10	0.2	0.4	23		397	247	26	DWR	
						2.69	2.25	1.78	0.04	0.00	4.42	1.94	0.39	0.16	0.01								
Central California Irrigation District #4 irrigation	7S/8E-12F1	7-6-61		977	7.6	85	42	65	2.4	0	3.60	88	81	16	0.2	0.3	21		578	385	90	DWR	
						4.24	3.45	2.83	0.06	0.00	5.90	1.83	2.28	0.26	0.01								
Simon Newman Company Irrigation	-13F1	7-27-61		875	7.9	50	32	92	2.1	0	301	86	80	13	0.3	0.4	24		528	259	12	DWR	
						2.50	2.67	4.00	0.05	0.00	4.93	1.79	2.26	0.21	0.02								
Central California Irrigation District #2 irrigation	-23R1	7-6-61		1,440	8.0	27	40	137	2.9	0	161	122	307	9.1	0.3	0.4	30		825	274	406	DWR	
						4.84	3.27	5.96	0.07	0.00	2.64	2.54	8.66	0.15	0.02								

0. Determined by addition of constituents.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in ————— equivalents per million										Total dissolved solids in ppm	Per- cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fide (SO ₄)	Chlo- ride (Cl)	Ni- tro- le (NO ₃)	Fluo- ride (F)			Boron (B)	Silico (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
	MDB&M								MERCED COUNTY														
Turlock Irrigation District #150 drainage	55/11E-29F1	8-16-61	66	270	8.2	22 1.10	9.0 0.74	20 0.87	1.1 0.03	0 0.00	112 1.84	10 0.21	10 0.28	20 0.32	0.2 0.01	0	72			219	32	0	DWR
W. S. Batterman irrigation	55/12E-32F1	6-22-61	75	157	7.9	12 0.50	14 0.12	14 0.61	2.6 0.09	0 0.00	65 1.06	2.8 0.08	8.8 0.25	3.4 0.15	0.1 0.00	0.09	47			126	43	0	DWR
Turlock Irrigation District #15 drainage	6S/10E-2H1	8-15-61	65	490	8.4	47 2.35	16 1.31	26 1.57	1.9 0.05	7 0.23	224 3.67	15 0.31	21 0.59	23 0.37	0.2 0.01	0.1	71			348	30	0	DWR
Turlock Irrigation District #107 drainage	-9B1	8-15-61	65	561	8.3	28 1.40	13 1.04	78 3.39	2.5 0.06	4 0.13	235 3.85	19 0.40	40 1.13	16 0.26	0.3 0.02	0.0	58			375	58	0	DWR
Turlock Irrigation District #162 drainage	-24L1	8-15-61	65	414	8.5	25 1.25	6.4 0.53	58 2.52	2.2 0.06	5 0.17	181 2.97	17 0.35	27 0.76	2.5 0.04	0.4 0.02	0.0	41			274	58	0	DWR
Riverside School drainage	-28K1	8-31-61	65	566	8.5	20 1.50	7.3 0.60	84 3.65	1.7 0.04	6 0.20	228 3.74	17 0.35	52 1.47	3.6 0.06	0.4 0.02	0.1	40			354	63	0	DWR
Turlock Irrigation District #228 drainage	6S/11E-3B1	8-14-61	65	579	8.4	50 2.50	10 0.86	58 2.52	1.4 0.04	7 0.23	202 3.31	45 0.94	27 0.76	47 0.76	0.3 0.02	0.0	68			413	43	0	DWR
Turlock Irrigation District #201A drainage	-9C1	9-6-61	65	459	8.3	45 2.25	11 0.94	34 1.48	2.4 0.06	3 0.11	159 2.61	37 0.77	17 0.48	47 0.77	0.3 0.02	0.1	62			337	31	25	DWR
Merced Irrigation District #133 irrigation	-27K1	6-26-61	68	210	9.0	16 0.80	2.9 0.32	20 0.87	2.6 0.09	0 0.00	88 1.44	12 0.25	5.0 0.14	14 0.22	0.2 0.01	0.08	61			179	42	0	DWR
Merced Irrigation District #109 irrigation	-36F1	7-12-61	67	286	8.1	23 1.15	6.4 0.53	25 1.09	2.4 0.09	0 0.00	123 2.02	14 0.29	8.1 0.23	20 0.32	0.3 0.02	0.06	69			229	38	0	DWR
Turlock Irrigation District #213 drainage	6S/12E-6L1	8-8-61		454	8.2	4.2 2.10	10 0.86	38 1.65	1.6 0.04	0 0.00	167 2.74	29 0.60	16 0.45	57 0.93	0.2 0.01	0.0	67			343	35	11	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c				
						equivalents per million										Silica (SiO ₂)	Other constituents ^d					
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)						Ni-tro-ride (NO ₃)	Fluo-ride (F)	Boron (B)	
	MERCED COUNTY (Cont.)																					
Merced Irrigation District #1 Irrigation	6S/12E-21N1	6-26-61	68	205	8.1	15 0.75	4.7 0.39	18 0.78	3.9 0.01	0 0.00	90 1.48	12 0.25	42 0.12	11 0.18	0.2 0.01	0.07	60	173	39	57	0	DWR
Merced Irrigation District #70 Irrigation	6S/13E-31F1	7-12-61	68	220	7.9	18 0.90	5.4 0.44	18 0.78	1.7 0.04	0 0.00	86 1.41	16 0.33	3.2 0.09	20 0.32	0.2 0.01	0.07	68	192	36	67	0	DWR
C. C. Fawcett Irrigation	7S/10E-7N1	7-8-61		821	8.5	12 0.60	5.4 0.44	16.9 7.35	2.4 0.06	8 0.27	27.9 4.57	34 0.71	29 2.79	1.1 0.02	0.4 0.02	0.26	26	504	87	52	0	DWR
Merced Irrigation District #115 Irrigation	7S/11E-4N1	7-12-61	67	460	8.4	29 1.45	5.5 0.45	64 2.78	5.3 0.14	6 0.20	206 3.38	17 0.35	22 0.62	17 0.27	0.4 0.02	0.11	55	322	58	95	0	DWR
Merced Irrigation District #135 Irrigation	7S/12E-121	7-12-61	67	347	8.0	33 1.65	8.9 0.73	26 1.13	1.9 0.05	0 0.00	144 2.36	22 0.46	15 0.42	17 0.27	0.2 0.01	0.08	72	274	32	119	1	DWR
Merced Irrigation District #49 Irrigation	7S/12E-19A1	7-12-61	66	308	8.2	34 1.70	6.8 0.56	21 0.91	4.2 0.11	0 0.00	164 2.69	8.6 0.18	5.2 0.15	13 0.21	0.3 0.02	0.08	66	240	28	113	0	DWR
Merced Irrigation District #9 Irrigation	7S/13E-4F1	7-12-61	68	298	8.3	26 1.30	8.3 0.68	24 1.04	2.9 0.07	0 0.00	138 2.26	7.2 0.15	2.7 0.27	21 0.34	0.2 0.01	0.07	70	237	34	99	0	DWR
Merced Irrigation District #35 Irrigation	-22C1	7-12-61	67	392	7.3	38 1.90	16 1.32	20 0.87	2.9 0.07	0 0.00	209 3.42	7.9 0.16	11 0.31	12 0.19	0.2 0.01	0.05	67	278	21	161	0	DWR
Merced Irrigation District #105 Irrigation	7S/14E-9R1	7-26-61	68		8.1	20 1.00	8.0 0.66	19 0.83	2.2 0.06	0 0.00	122 2.00	5.1 0.11	2.5 0.27	11 0.18	0.2 0.01	0.05	64	199	32	83	0	DWR
Merced Irrigation District #86 Irrigation	-28J1	6-28-61	67	401	8.3	22 1.60	17 1.38	33 1.44	2.3 0.08	0 0.00	241 3.95	8.6 0.18	7.1 0.20	7.8 0.12	0.1 0.00	0.06	67	294	32	149	0	DWR
Merced Irrigation District #106 Irrigation	-31M1	7-19-61	63	605	7.8	54 2.69	25 2.07	43 1.87	2.7 0.07	0 0.00	237 5.52	22 0.46	20 0.56	9.7 0.16	0.2 0.01	0.07	64	210	22	128	0	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Technical District #111, or State Department of Water Resources (DWR), as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Barium (Ba)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm	
	MDB&M					MERCED COUNTY (Cont.)																		
Merced Irrigation District #124 irrigation	7S/15E-18K1	7-12-61	70	274	8.0	22 1.10	11 0.88	16 0.70	5.7 0.14	0 0.00	14.2 2.33	9.7 0.20	8.0 0.22	5.2 0.08	0.2 0.01	0.05	74			222	25	99	0	DWR
Merced Irrigation District #98 irrigation	-30E1	7-12-61	67	779	8.0	71 3.54	32 2.63	50 2.18	2.2 0.06	0 0.00	352 5.77	76 1.58	13 0.37	35 0.56	0.2 0.01	0.08	22			504	26	309	20	DWR
Merced Irrigation District #95 irrigation	-34E1	7-19-61	68	317	7.5	29 1.45	13 1.11	17 0.74	1.4 0.04	0 0.00	162 2.66	18 0.37	7.6 0.21	4.1 0.07	0.3 0.02	0.04	40			210	22	128	0	DWR
Lone Tree Cattle Company irrigation	8S/9E-12E1	7-8-61		1,720	7.8	75 3.74	25 2.91	242 10.53	2.0 0.08	0 0.00	14.9 2.44	47.2 9.83	202 5.70	1.1 0.02	0.1 0.00	2.0	21			1,137	61	333	211	DWR
Quistine Drainage District #15 irrigation	-16E1	7-25-61		823	7.6	105 5.24	8.9 0.73	73 3.18	1.0 0.02	0 0.00	331 5.42	102 2.12	46 1.30	13 0.21	0.5 0.03	0.52	28			541	35	299	28	DWR
F. Harrison irrigation	8S/10E-29D	6-22-61	76	2,400	7.9	72 3.59	27 2.26	418 18.18	3.1 0.08	0 0.00	158 2.59	603 12.55	324 9.14	4.6 0.07	0.3 0.02	2.2	20			1,560	75	293	163	DWR
Merced Irrigation District #138 irrigation	8S/14E-20I	7-18-61	69	296	7.8	23 1.15	7.9 0.65	29 1.26	2.4 0.06	0 0.00	160 2.62	2.0 0.19	8.1 0.23	6.2 0.11	0.2 0.01	0.06	40			206	40	90	0	DWR
Merced Irrigation District #122 irrigation	-24A1	7-19-61	69	348	7.9	29 1.45	15 1.21	22 0.96	6.3 0.16	0 0.00	207 3.39	7.2 0.15	4.8 0.14	6.4 0.10	0.2 0.01	0.04	69			262	25	133	0	DWR
Wolfson Brothers irrigation	9S/9E-21I	7-25-61		964	7.8	42 2.10	23 1.86	123 5.35	2.1 0.05	0 0.00	189 3.10	108 2.25	150 4.23	1.1 0.02	0.1 0.00	1.2	20			574	57	198	43	DWR
Quistine Drainage District #6 irrigation	-58I	7-25-61		924	7.9	61 3.04	33 2.71	100 4.35	1.1 0.03	0 0.00	362 5.93	80 1.66	79 2.23	10 0.16	0.3 0.02	0.92	23			576	43	288	0	DWR
Central California Irrigation District #1 irrigation	-21F1	7-8-61		824	8.0	48 2.40	21 1.76	88 3.83	1.5 0.04	0 0.00	242 3.97	55 1.14	98 2.76	12 0.19	0.4 0.02	1.2	27			471	48	208	10	DWR
State Game Refuge irrigation and domestic	9S/10E-36R1	7-19-61		886	8.0	57 2.84	40 3.33	67 2.91	1.2 0.05	0 0.00	168 2.75	164 3.41	27 2.74	1.0 0.02	0.2 0.01	0.64	28			550	32	309	171	DWR

a. Determined by addition of constituents

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ride (NO ₃)	Fluo-ride (F)			Baron (B)	Silica (SiO ₂)		Other constituent ^d	Total ppm	N.C. ppm
	MDBM																						
R. Mueller domestic and stock	9S/11E-7N1	6-22-61	71	1,660	8.1	28 1.40	3.6 0.30	320 13.92	1.1 0.03	0 0.00	203 3.33	410 8.54	128 3.61	0.7 0.01	0.3 0.02	2.6 0.02	24		1,020	89	85	0	DWR
Delta Ranch domestic	-26N1	6-22-61	68	964	7.8	31 1.55	11 0.93	150 6.52	1.6 0.04	0 0.00	185 3.03	70 1.46	165 4.65	0.7 0.01	0.2 0.01	0.36 0.01	26		547	72	124	0	DWR
Newhall Land Company irrigation	9S/12E-17B	6-22-61	74	815	8.2	21 1.05	1.8 0.15	144 6.26	1.5 0.04	0 0.00	161 2.64	62 1.29	130 3.67	0.6 0.01	0.6 0.03	0.10 0.03	32		474	83	60	0	DWR
Newhall Land Company irrigation	9S/13E-8G	6-21-61	71	-	-	23 1.15	9.6 0.79	81 3.52	1.1 0.03	0 0.00	244 4.00	25 0.52	29 0.82	2.6 0.06	0.44 0.02	0.08 0.02	72		366	64	97	0	DWR
Newhall Land Company irrigation	-29L	6-21-61	74	990	8.1	74 3.69	18 1.52	93 4.04	1.7 0.04	0 0.00	175 2.87	54 1.11	221 6.23	0.9 0.01	0.5 0.03	0.10 0.03	43		543	43	261	117	DWR
Miller and Lux irrigation	-31D1	7-19-61	782	8.0	54 2.69	15 1.21	26 4.18	1.0 0.02	0 0.00	258 4.23	25 0.52	118 3.33	0.9 0.01	0.2 0.01	0.04 0.01	53		490	52	195	0	DWR	
M. M. Cotta irrigation	9S/14E-20B	6-22-61	68	759	7.8	86 4.29	13 1.08	46 2.00	4.2 0.11	0 0.00	265 4.02	11 0.23	111 3.13	8.2 0.13	0.2 0.01	0.10 0.01	59		459	27	269	68	DWR
E. R. Oias irrigation	10S/9E-2D	6-22-61	72	1,190	7.9	46 2.30	22 1.84	169 7.35	1.7 0.04	0 0.00	273 4.47	62 1.29	201 5.67	15 0.24	0.44 0.02	1.8 0.02	27		680	64	207	0	DWR
Central California Irrigation District #8 irrigation	10S/10E-28D1	7-25-61	631	8.1	55 2.74	27 2.26	29 1.70	2.6 0.07	0 0.00	240 3.93	55 1.14	26 1.58	12 0.19	0.1 0.00	0.49 0.00	38		403	25	250	53	DWR	
Bisignani Bros. irrigation	10S/12E-6K1	7-19-61	720	7.2	32 1.60	14 1.18	96 4.18	1.6 0.04	0 0.00	169 2.77	58 1.21	107 3.02	0.6 0.01	0.2 0.01	0.31 0.01	29		422	60	139	1	DWR	
Central California Irrigation District #5 irrigation and domestic	-27K1	7-7-61	1,750	8.2	82 4.09	39 3.24	220 9.57	3.0 0.08	0 0.00	193 3.16	90 1.87	415 11.70	1.8 0.03	0.1 0.00	0.45 0.00	38		984	56	367	209	DWR	
Central California Irrigation District #6 irrigation	-35K1	7-7-61	2,060	7.9	26 4.79	22 3.24	276 12.01	2.6 0.09	0 0.00	173 2.84	124 2.58	210 14.38	0.5 0.01	0.2 0.01	0.74 0.01	26		1,170	60	402	260	DWR	
Edging Farms irrigation	10S/13E-1A1	7-8-61	564	7.8	68 3.39	11 0.91	34 1.48	4.3 0.11	0 0.00	229 3.75	30 0.62	35 0.99	24 0.39	0.1 0.00	0.05 0.00	70		388	25	215	27	DWR	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by		
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicor-bonate (CO ₃)	Sul-fate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents		Total ppm	N.C. ppm
R. Lindemann irrigation	MDBAM 11S/10E-23K1	7-18-61		4,350	8.1	291 14.52	171 14.05	455 19.79	3.3 0.08	0 0.00	1050 21.86	800 22.56	108 1.74	0.4 0.02	2.2	21			2,980	40	1,299	DWR
		7-25-61	72	216	7.8	20 1.00	4.6 0.38	15 0.65	2.4 0.06	0 0.00	1.8 0.04	20 0.56	4.5 0.07	0.1 0.00	0.06	70			181	31	69	DWR
R. Jessup irrigation	9S/15E-24F1	7-25-61	72	198	8.2	17 0.85	4.2 0.35	16 0.70	2.8 0.07	0 0.00	3.0 0.06	18 0.51	3.0 0.05	0.1 0.00	0.03	62			173	36	60	DWR
	10S/14E-881	7-25-61	72	440	8.0	27 1.85	10 0.87	38 1.65	3.5 0.09	0 0.00	6.1 0.13	31 0.87	15 0.24	0.1 0.00	0.06	66			300	37	136	DWR
H. Probert irrigation	10S/15E-31A1	7-25-61	72	662	7.4	70 3.49	15 1.21	38 1.65	4.5 0.12	0 0.00	7.6 0.16	110 3.10	7.3 0.12	0.1 0.00	0.05	72			416	26	235	DWR
	10S/16E-24H1	7-25-61	73	257	7.5	25 1.25	6.4 0.53	16 0.70	2.5 0.06	0 0.00	4.6 0.10	11 0.31	17 0.27	0.2 0.01	0.05	62			207	28	89	DWR
J. P. Lillies irrigation	-30K1	7-25-61	73	339	8.2	24 1.70	7.3 0.60	25 1.09	2.6 0.07	0 0.00	3.0 0.06	25 0.70	10 0.16	0.1 0.00	0.06	44			225	32	115	DWR
		7-26-61	73	235	8.1	18 0.90	6.3 0.52	18 0.78	2.7 0.07	0 0.00	4.6 0.10	16 0.45	15 0.24	0.2 0.01	0.05	81			205	34	71	DWR
Madera Country Club irrigation and domestic	11S/14E-1A1	7-25-61	68	877	8.0	74 3.69	17 1.38	91 3.96	4.2 0.11	0 0.00	22 0.46	105 2.96	3.1 0.05	0.2 0.01	0.09	70			554	43	254	DWR
	-581	7-25-61	72	506	8.2	30 2.50	2.0 0.74	29 1.26	3.2 0.08	0 0.00	5.6 0.12	99 2.79	1.7 0.03	0.1 0.00	0.04	75			319	28	162	DWR
G. O. Turnbrow, Ent. irrigation	-16A1	7-25-61	72	539	8.3	52 2.59	12 0.97	34 1.48	3.9 0.10	0 0.00	12 0.25	91 2.57	8.3 0.13	0.2 0.01	0.05	72			354	29	178	DWR
		7-25-61	73	365	8.3	23 1.65	10 0.83	30 1.30	2.8 0.07	0 0.00	5.8 0.12	21 0.59	7.7 0.12	0.2 0.01	0.07	71			272	34	124	DWR
H. B. Shein irrigation	11S/15E-23L1	7-25-61	70	426	8.3	29 1.95	10 0.85	24 1.48	2.8 0.07	0 0.00	8.4 0.17	26 1.02	3.6 0.06	0.2 0.01	0.06	72			305	34	140	DWR
	-29H1	7-25-61	72	372	8.4	24 1.70	11 0.90	26 1.13	3.7 0.09	2 0.07	6.9 0.14	28 0.79	2.1 0.15	0.2 0.01	0.05	72			272	30	130	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyses by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

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						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Fluo- ride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
	MDBAM								MADERA COUNTY (Cont.)														
City of Madera municipal	11S/17E-25E1	7-26-61	72	184	7.6	13 0.65	2.8 0.31	17 0.74	4.2 0.11	0 0.00	80 1.31	3.6 0.07	13 0.37	1.6 0.02	0.02 0.01	0.05	67		162	41	0	DWR	
	11S/18E-20E1	7-26-61	75	187	8.0	12 0.60	2.6 0.30	18 0.78	4.5 0.12	0 0.00	75 1.23	3.3 0.07	16 0.45	2.5 0.04	0.2 0.01	0.06	72		169	43	0	DWR	
Guy Houk Ranch irrigation	12S/14E-10N1	7-25-61	78	3,120	7.9	290 14.47	42 3.45	273 11.88	6.1 0.16	0 0.00	78 1.28	195 4.06	859 24.22	3.5 0.06	0.3 0.02	0.08	72		1,780	40	897	DWR	
Guy Houk Ranch irrigation	-16K1	7-25-61	78	783	8.4	11 0.55	1.1 0.09	154 6.70	1.4 0.04	2 0.07	156 2.56	73 1.52	111 3.13	0.0 0.00	0.2 0.01	0.4	64		495	91	32	0	DWR
Red Top Ranch irrigation	12S/15E-4K1	7-25-61	72	506	8.2	46 2.30	13 1.08	33 1.44	3.4 0.09	0 0.00	157 2.57	11 0.23	72 2.03	1.6 0.02	0.2 0.01	0.05	73		330	29	169	40	DWR
Red Top Ranch irrigation	-22F1	7-25-61	72	321	8.2	28 1.40	5.4 0.44	3.2 1.39	1.8 0.05	0 0.00	146 2.39	6.2 0.13	24 0.68	1.2 0.02	0.1 0.00	0.05	65		236	42	92	0	DWE
W. Gill irrigation	-27G1	7-25-61	72	348	8.1	29 1.45	4.7 0.39	17 1.61	3.0 0.08	0 0.00	150 2.46	6.6 0.14	29 0.82	1.2 0.02	0.2 0.01	0.05	73		258	46	92	0	DWR
G. Weer irrigation	12S/17E-5R1	7-25-61	72	195	8.0	16 0.80	3.4 0.28	16 0.70	3.5 0.09	0 0.00	78 1.28	4.0 0.08	17 0.48	2.3 0.04	0.2 0.01	0.05	83		183	37	54	0	DWE
S. Thomas irrigation	-7F1	7-25-61	73	524	8.5	50 2.50	13 1.10	37 1.61	5.0 0.13	5 0.17	171 2.80	63 1.31	32 0.90	7.4 0.12	0.2 0.01	0.08	81		378	30	180	32	DWR
Hordecali irrigation	12S/18E-7L1	7-26-61	68	205	7.9	17 0.85	5.7 0.47	15 0.65	4.2 0.11	0 0.00	92 1.51	5.8 0.12	13 0.37	3.8 0.06	0.2 0.01	0.06	64		174	31	66	0	DWR
Iverson and Carlton irrigation	-14J1	7-26-61	72	275	7.7	26 1.30	2.4 0.28	22 0.96	2.6 0.09	0 0.00	77 1.26	11 0.23	26 0.73	21 0.34	0.2 0.01	0.06	78		229	36	79	16	DWR
E. Jones irrigation	12S/19E-3281	7-26-61	72	172	8.0	14 0.70	4.1 0.34	14 0.61	3.5 0.09	0 0.00	78 1.28	2.6 0.07	7.7 0.22	7.7 0.12	0.2 0.01	0.06	54		147	35	52	0	DWR
Columbia Canal Company irrigation	13S/15E-22J1	7-20-61		205	8.4	1.6 0.08	0.2 0.02	44 1.91	0.6 0.02	4 0.13	88 1.44	3.3 0.07	14 0.39	0.2 0.00	0.3 0.02	0.14	38		149	94	4.8	0	DWR
Columbia Canal Company irrigation	-25C1	7-20-61		195	8.3	1.6 0.08	0.2 0.02	42 1.83	0.7 0.02	0 0.00	85 1.39	2.8 0.08	17 0.48	0.2 0.00	0.3 0.02	0.11	44		152	94	5.1	0	DWE
D. Mendrin irrigation	13S/16E-2C1	7-25-61	72	328	8.1	28 1.40	8.3 0.68	30 1.30	2.1 0.05	0 0.00	165 2.70	4.8 0.10	18 0.51	2.7 0.04	0.2 0.01	0.05	78		253	38	104	0	DWR
G. Roberts irrigation	13S/17E-5F1	7-25-61	77	698	8.0	70 3.49	13 1.09	48 2.09	2.1 0.05	0 0.00	277 4.54	27 0.56	40 1.13	21 0.34	0.2 1.13	0.16	72		429	31	229	2	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
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						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Fluo- ride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm
	<u>KIDBAH</u>								<u>TULARE COUNTY</u>													
Pearl Ranch Irrigation	16S/23E-21A1	4-4-61	67	426	7.8	41 2.04	12 0.96	25 1.09	2.6 0.07	0 0.00	178 2.92	12 0.25	29 0.82	12 0.19	0.2 0.01	0.14	54	276	26	150	4	DWR
N. Kalender Irrigation	16S/24E-3U1	4-4-61	59	639	8.2	49 2.44	24 1.94	43 1.87	4.8 0.12	0 0.00	211 3.46	22 0.46	68 1.92	24 0.55	0.2 0.01	0.05	58	407	29	219	46	DWR
California Grower Wineries Industrial	16S/25E-32N	6-6-61	79	583	7.9	63 3.14	21 1.70	36 1.57	3.7 0.09	0 0.00	283 4.64	19 0.40	34 0.96	14 0.22	0.2 0.01	0.07	72	403	24	242	10	DWR
J. Aguiav domestic	17S/23E-8H1	6-6-61	65	794	8.3	64 3.19	22 1.84	81 3.52	2.5 0.06	0 0.00	329 5.39	24 0.50	78 2.20	19 0.31	0.1 0.00	0.09	59	512	41	252	0	DWR
R. E. Stapleton Irrigation	17S/24E-15A2	6-23-61	70	505	8.2	44 2.20	20 1.61	30 1.30	3.2 0.08	0 0.00	198 3.24	16 0.33	48 1.35	12 0.19	0.2 0.01	0.07	62	333	25	191	39	DWR
Yasuda Brothers Irrigation and domestic	17S/25E-34P	6-6-61	73	529	8.3	68 3.39	7.9 0.65	37 1.61	2.8 0.07	0 0.00	244 4.00	15 0.31	35 0.99	16 0.26	0.2 0.01	0.07	52	355	28	202	2	DWR
A. Castro domestic	18S/24E-19W1	6-6-61	72	221	8.1	19 0.95	0.4 0.03	31 1.35	0.3 0.01	0 0.00	126 2.06	1.5 0.03	7.3 0.20	1.6 0.02	0.1 0.00	0.04	24	147	58	49	0	DWR
D. Shannon Irrigation	18S/26E-10N	6-23-61	67	617	8.0	47 2.34	23 1.90	50 2.18	2.6 0.07	0 0.00	209 3.42	49 1.02	23 0.65	78 1.26	0.2 0.01	0.07	50	426	34	212	41	DWR
Junett Brothers domestic	19S/23E-24G1	6-6-61	72	238	7.9	26 1.80	1.7 0.14	14 0.61	0.3 0.01	0 0.00	190 2.13	2.6 0.07	7.1 0.20	4.0 0.06	0.1 0.00	0.04	23	154	24	97	0	DWR
Pacific States Corp. Irrigation	19S/24E-22C1	6-16-61	68	190	8.1	18 0.90	0.5 0.04	22 0.96	1.1 0.03	0 0.00	9.6 1.57	4.6 0.10	5.6 0.16	4.5 0.00	0.0 0.07	0.03	19	122	50	47	0	DWR
J. Lewis domestic	19S/25E-31J1	6-6-61	71	195	8.2	28 1.40	1.9 0.16	11 0.48	1.3 0.03	0 0.00	112 1.84	1.8 0.04	2.7 0.08	3.6 0.06	0.1 0.00	0.03	20	125	23	78	0	DWR
City of Exeter domestic	19S/26E-3K1	6-5-61	72	488	8.2	55 2.74	8.5 0.70	37 1.61	2.7 0.07	0 0.00	214 3.51	18 0.37	36 1.02	11 0.18	0.3 0.02	0.08	26	310	31	172	0	DWR
R. Montgomery Irrigation	-26M1	6-6-61	74	462	8.3	17 0.85	11 0.93	64 2.78	1.8 0.05	0 0.00	167 2.74	15 0.31	47 1.32	13 0.21	0.2 0.01	0.14	17	268	60	89	0	DWR
Harrie & Gade Irrigation	20S/23E-27P	6-16-61	70	233	8.3	22 1.10	0.0 0.00	30 1.30	0.4 0.01	0 0.00	115 1.88	9.5 0.20	7.8 0.22	5.3 0.08	0.2 0.01	0.08	20	161	54	54	0	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch, (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

d. Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

e. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c
						equivalents per million												Silica (SiO ₂)	Other constituents	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)					
	MURRAY																			
A. W. Purze Irrigation	20S/26E-5R1	6-16-61	72	924	8.1	49 2.44	38 3.13	75 3.26	3.7 0.09	0 0.00	147 2.41	50 1.04	190 5.36	14 0.22	0.2 0.01	0.13	36	279	159	DWR
Rogers Farms Irrigation	-19F	6-16-61	68	438	8.2	24 1.70	11 0.94	28 1.65	3.0 0.08	0 0.00	147 2.41	24 0.50	26 1.02	23 0.37	0.3 0.02	0.10	46	132	12	DWR
H. G. Carr Irrigation	20S/27E-13A1	8-22-61	65	1,140	8.1	71 3.54	28 3.13	87 3.78	4.7 0.12	0 0.00	142 2.33	4.5 0.94	228 6.43	47 0.76	0.2 0.01	0.20	43	334	218	DWR
J. G. Boswell Irrigation	21S/23E-36P1	6-16-61	73	119	8.5	2.0 0.10	0.0 0.00	44 1.91	0.2 0.00	4 0.13	85 1.39	8.6 0.18	8.6 0.24	0.2 0.00	0.6 0.03	0.14	25	5	0	DWR
J. Torres, Jr. Irrigation	21S/24E-10N1	6-16-61	72	222	8.6	4.2 0.21	0.4 0.03	48 2.09	0.3 0.01	4 0.13	104 1.70	6.7 0.14	10 0.28	0.2 0.00	0.6 0.03	0.17	36	12	0	DWR
W. Harness domestic and Irrigation	21S/27E-15P2	7-26-61	72	578	8.4	24 1.20	4.9 0.40	55 4.13	2.9 0.07	2 0.07	164 2.69	54 1.12	24 0.96	52 0.84	0.3 0.02	0.13	22	80	0	DWR
W. Murray Irrigation	22S/23E-6A1	6-16-61	69	843	7.9	56 2.79	7.4 0.61	118 5.13	0.8 0.02	0 0.00	233 3.82	24 0.50	134 3.78	2.2 0.05	0.5 0.03	0.26	27	170	0	DWR
J. G. Schott Irrigation	22S/25E-22A	6-16-61	73	240	8.1	20 1.00	1.7 0.14	31 0.35	1.7 0.04	0 0.00	120 1.97	4.3 0.09	11 0.31	4.2 0.07	0.2 0.01	0.09	22	57	0	DWR
Schenley Ranch Irrigation	22S/26E-16M1	4-5-61	78	283	8.3	11 0.55	0.6 0.05	53 2.30	0.9 0.02	0 0.00	133 2.18	10 0.21	14 0.39	2.3 0.04	0.3 0.02	0.22	19	30	0	DWR
J. Pemberton domestic	22S/27E-11C1	8-23-61	82	497	8.3	60 2.99	15 1.21	27 1.17	2.4 0.06	0 0.00	289 4.74	2.7 0.20	12 0.34	9.9 0.16	0.2 0.01	0.13	28	210	0	DWR
Irrigation	23S/24E-32P	4-5-61	77	345	8.2	4.8 0.24	0.2 0.02	68 2.95	0.5 0.01	0 0.00	119 1.95	22 0.46	28 0.79	0.3 0.00	1.8 0.09	0.24	27	13	0	DWR
T. Kirksey Irrigation	23S/25E-9F1	8-23-61	72	244	8.0	19 0.95	0.8 0.07	31 1.35	0.6 0.02	0 0.00	94 1.54	12 0.25	18 0.51	4.5 0.07	0.3 0.02	0.07	40	51	0	DWR
Maze Farms Irrigation	23S/26E-11J	4-5-61	90.5	700	8.5	42 0.21	0.1 0.01	129 6.05	1.0 0.05	5 0.17	130 2.13	15 0.31	1.28 3.61	0.4 0.01	0.7 0.04	0.72	26	11	0	DWR
R. Burke Irrigation	23S/27E-21H	6-26-61	92	570	8.2	7.6 0.38	0.2 0.02	118 5.13	1.8 0.05	0 0.00	137 2.24	4.6 0.96	77 2.17	1.8 0.03	0.9 0.05	0.60	44	20	0	DWR
G. Classen Irrigation	-27G1	7-26-61	79	561	8.4	72 3.59	1.6 1.29	28 1.22	2.3 0.06	2 0.17	299 4.90	12 0.25	24 0.68	1.5 0.24	0.2 0.01	0.13	22	244	0	DWR

9 Determined by addition of constituents.

10 Proximate analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

11 Determined by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

12 Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

13 Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Monoxide (Ni), Zinc (Zn).

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million—equivalents per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents		Total ppm	N.C. ppm
	ND&M																					
H. Mitchell irrigation	24S/23E-8D	7-26-61	78	556	7.3	18 0.90	4.4 0.36	97 4.22	2.5 0.09	184 3.02	1.2 0.02	72 2.03	0.5 0.01	0.8 0.04	0.30	20	308	76	63	0	DWR	
M. Hall irrigation	24S/25E-23H1	7-26-61	72	374	8.1	36 1.80	6.6 0.54	20 1.30	2.4 0.06	126 2.06	20 0.42	20 0.56	26 0.58	0.2 0.01	0.06	53	266	35	117	14	DWR	
Schenley Ranch irrigation	24S/26E-31L2	4-5-61	83	513	7.9	2.6 0.38	1.2 0.10	111 4.83	2.1 0.05	238 3.90	22 0.46	24 0.96	25 0.04	0.2 0.01	0.57	16	314	90	24		DWR	
M. Gutinich irrigation	24S/27E-32F1	7-26-61	84	487	8.2	5.2 0.26	0.0 0.00	103 4.48	1.7 0.04	163 2.67	32 0.67	46 1.30	1.5 0.02	0.7 0.04	0.31	66	336	94	13	0	DWR	
R. Hallsten domestic	17S/22E-2H	8-8-61	69	186	7.6	20 1.00	6.6 0.54	5.7 0.25	1.6 0.04	80 1.31	6.1 0.13	2.4 0.10	1.4 0.22	0.1 0.00	0.06	29	126	14	77	11	DWR	
H. I. Brown irrigation	18S/19E-6G1	8-11-61	67	1,220	8.3	31 1.55	7.2 0.59	231 10.05	0.7 0.02	271 4.44	272 5.66	21 2.57	0.7 0.01	1.4 0.07	1.1	17	786	82	107	0	DWR	
D. Johns irrigation	-26H1	8-14-61	68	464	8.6	2.8 0.14	0.0 0.00	109 4.74	0.4 0.01	222 3.64	3.3 0.07	28 0.79	0.4 0.01	1.8 0.09	0.78	18	282	97	7.1	0	DWR	
W. Verboon irrigation	18S/21E-14F1	8-8-61	67	260	8.1	32 1.65	2.8 0.23	16 0.70	0.2 0.02	102 1.67	26 0.54	11 0.31	1.4 0.02	0.1 0.00	0.04	20	171	27	94	10	DWR	
Weddeburn Brothers irrigation	19S/19E-15H1	8-10-61	78	1,490	7.8	63 3.14	6.1 0.50	278 12.09	1.6 0.04	284 4.65	321 6.68	149 4.20	0.3 0.00	0.4 0.02	1.8	21	992	77	182	0	DWR	
Serge domestic	19S/20E-33A1	8-8-61	74	571	8.3	6.8 0.34	0.0 0.00	131 5.70	0.7 0.02	275 4.51	14 0.29	24 0.96	2.8 0.04	0.5 0.03	1.0	24	356	94	17	0	DWR	
Mussel Slough Farms irrigation	19S/21E-3B1	8-8-61	70	253	8.1	4.5 0.22	0.2 0.02	54 2.35	0.6 0.02	142 2.33	6.7 0.14	4.9 0.14	0.2 0.00	1.0 0.05	0.36	46	188	90	12	0	DWR	
Manzanillo Ranch irrigation	19S/23E-8H1	8-8-61	71	143	8.2	4.2 0.24	0.2 0.02	27 1.17	0.3 0.01	71 1.16	4.8 0.10	5.3 0.15	1.5 0.02	0.2 0.01	0.03	21	100	81	13	0	DWR	
C. Orton irrigation and domestic	20S/20E-10L1	8-10-61	74	830	8.5	9.7 0.48	0.0 0.00	206 8.96	1.6 0.04	147 7.33	20 0.42	24 0.96	5.8 0.09	0.4 0.02	1.4	47	558	94	24	0	DWR	
H. L. Yokum and Sons domestic	20S/21E-12A1	8-8-61	74	1,000	7.7	65 3.24	15 1.26	125 5.44	0.7 0.02	254 4.16	53 1.10	163 4.60	0.5 0.01	0.4 0.02	0.21	29	577	55	225	117	DWR	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

1961

d. Determined by addition of constituents.
e. Gravimetric determination.
f. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
g. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in ————— parts per million —————										Total dissolved solids in ppm	Hardness as CaCO ₃		Analyzed by c					
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)		Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm		
	<u>SBR&M</u>								KERN COUNTY															
Tejon Ranch domestic	11N/18W-14M1	7-31-61	73	534	7.8	60 2.99	22 1.79	21 0.91	2.8 0.07	0 0.00	24.3 3.98	58 1.21	12 0.34	84 0.14	0.3 0.02	0.28	30			334	16	239	40	DWR
Tejon Ranch domestic and irrigation	11N/19W-25F1	7-31-61	70	500	8.1	47 2.35	17 1.41	24 1.48	2.7 0.07	0 0.00	221 3.62	40 0.83	21 0.59	4.5 0.07	0.5 0.03	0.2	22			294	28	198	0	DWR
W. O. Fry irrigation	11N/20W-8R1	7-31-61	78	1,520	8.1	150 7.48	44 3.62	141 6.13	7.3 0.19	0 0.00	157 2.57	610 12.70	48 1.35	21 0.15	0.7 0.04	0.6	21			1,120	35	555	426	DWR
Kern Rock Company industrial	-25K1	7-31-61	82	2,120	8.1	219 10.93	57 4.67	228 9.92	11 0.28	0 0.00	112 1.84	1000 20.82	55 1.55	38 0.61	0.6 0.03	0.5	22			1,690	38	780	688	DWR
R. Hildebrand irrigation	12N/19W-33R1	7-25-61	75	352	8.1	25 1.25	9.4 0.77	34 1.48	2.1 0.08	0 0.00	164 2.69	21 0.64	6.9 0.19	2.8 0.04	0.6 0.03	0.17	20			214	41	101	0	DWR
Parks Brothers irrigation	12N/21W-33N1	7-31-61	78	1,510	7.9	153 7.63	65 5.36	106 4.61	8.0 0.20	0 0.00	124 2.03	686 14.28	33 0.93	14 0.22	1.2 0.06	0.46	25			1,150	26	650	548	DWR
	<u>MD&M</u>																							
Gilland Oil Company industrial	25S/18E-3N2	6-20-61	72	3,740	7.6	235 11.73	210 17.24	207 13.35	5.8 0.15	0 0.00	244 4.00	1070 22.28	5.83 16.44	10 0.16	0.3 0.02	2.5	38			2,580	31	1,450	1,250	DWR
K. K. Ranch #29 irrigation	25S/19E-7P1	6-20-61	78	5,180	7.5	174 8.68	283 23.29	750 32.62	12 0.31	0 0.00	466 7.64	2290 46.43	405 11.42	12 0.19	0.4 0.02	7.8	69			4,170	50	1,600	1,220	DWR
Tulare Gun Club irrigation	25S/23E-11J1	6-28-61	83	164	8.3	1.6 0.08	0.0 0.00	25 1.52	0.3 0.01	0 0.00	76 1.24	9.4 0.20	5.5 0.16	0.2 0.0	0.7 0.04	0.06	21			121	94	4	0	DWR
C. Fairbairn irrigation	25S/24E-27R1	6-28-61	72	356	8.8	24 1.20	1.0 0.08	44 1.91	0.8 0.02	8 0.27	47 0.77	73 1.52	17 0.48	11 0.18	0.3 0.02	0.07	62			265	60	52	12	DWR
irrigation	25S/25E-4Q1	6-29-61	72	381	8.3	34 1.70	5.8 0.48	22 1.39	2.2 0.06	0 0.00	133 2.18	26 0.54	24 0.68	12 0.19	0.2 0.01	0.08	85			286	38	109	0	DWR
Mid-State Hort., Co. irrigation	25S/26E-1R1	6-28-61	78	322	7.9	16 0.80	1.0 0.08	46 2.00	3.1 0.08	0 0.00	91 1.49	23 0.48	22 0.62	30 0.32	0.2 0.01	0.07	23			199	68	44	0	DWR
M. Caravan irrigation	-16J1	6-28-61	78	357	8.1	17 0.85	1.6 0.13	53 2.30	2.2 0.06	0 0.00	107 1.75	36 0.75	21 0.59	14 0.3	0.2 0.02	0.08	54			252	69	49	0	DWR
irrigation	26S/18E-1A	7-19-61	76	4,740	8.1	90 4.49	126 10.37	800 34.80	3.2 0.08	0 0.00	3.24 5.47	5.73 11.93	1140 32.15	0.6 0.01	0.3 0.02	2.7	25			3,930	70	744	470	DWR
R. Heitzig irrigation	26S/24E-3R1	6-28-61	76	207	9.2	6.0 0.30	0.2 0.02	36 1.57	0.7 0.02	10 0.33	40 0.66	29 0.60	8.7 0.24	4.1 0.07	0.4 0.02	0.05	25			140	82	16	0	DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (DWR), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d
KERN COUNTY (Cont.)																					
N. G. Smith domestic and stock	26S/27E-921	6-28-61	84	2,390	7.9	24.6 12.28	80 6.56	174 7.57	24 0.61	77 1.26	770 16.03	329 9.28	1.8 0.03	0.4 0.02	0.15	66		1,730 28 880 DWR			
Tide Water Oil Co. Industrial	27S/20E-34G1	7-19-61	82	4,720	8.8	17 0.85	21 1.71	1060 40.11	31 0.79	67 2.23	474 9.87	906 25.55	40 0.64	0.2 0.01	7.8	65		3,010 93 0 DWR			
T. W. Kenney irrigation	27S/22E-202	6-28-61	77	2,650	7.7	81 4.04	2.2 0.18	455 19.79	1.0 0.02	60 0.98	23 0.48	794 22.39	0.4 0.01	1.3 0.07	0.90	22		1,410 82 162 DWR			
Houchin Farms irrigation	-21P1	6-21-61	67	2,920	7.8	218 10.88	22 1.81	390 16.96	2.1 0.05	163 2.67	564 11.74	559 15.76	1.2 0.02	0.4 0.02	1.4	23		1,860 57 501 DWR			
A. Falla irrigation	-28G2	6-21-61	68	2,030	7.9	131 6.54	8.6 0.71	295 12.83	1.0 0.02	162 2.66	518 10.78	236 6.66	0.6 0.01	0.4 0.02	0.71	21		1,290 64 363 DWR			
R. Neumann irrigation	27S/23E-27J1	7-5-61	82	256	7.8	4.1 0.20	0 0.00	50 2.18	0.3 0.01	63 1.03	17 0.35	34 0.96	0.5 0.01	0.4 0.02	0.09	22		159 91 10 0 DWR			
Kern County Land Co. irrigation	27S/24E-5R1	7-5-61	84	150	8.0	6.1 0.30	0.2 0.02	26 1.13	0.6 0.02	59 0.97	12 0.25	5.9 0.17	4.3 0.07	0.2 0.01	0.05	21		105 77 16 0 DWR			
Kern County Land Co. irrigation	27S/25E-5R1	6-28-61	80	316	8.2	16 1.80	0.5 0.04	28 1.22	1.8 0.05	127 2.08	17 0.35	9.3 0.26	21 0.34	0.2 0.01	0.09	26		202 39 92 0 DWR			
C. West irrigation	27S/26E-27R1	6-29-61	76	1,230	7.4	156 7.78	25 2.03	29 1.70	5.0 0.13	132 2.18	79 1.64	249 7.02	24 0.55	0.2 0.01	0.06	22		684 15 491 382 DWR			
E. West irrigation	27S/27E-29J1	6-28-61	72	1,160	7.8	65 3.24	1.66 1.66	125 5.44	3.0 0.08	86 1.41	80 1.66	254 7.16	9.0 0.14	0.2 0.01	0.45	22		638 52 245 175 DWR			
Houchin Farms domestic and irrigation	28S/22E-441	6-26-61	67	2,420	7.9	114 5.69	6.1 0.50	397 17.27	1.0 0.02	60 0.98	509 10.58	428 12.07	0.6 0.01	0.3 0.02	0.91	21		1,510 74 310 261 DWR			
Blue Moon Farms domestic and irrigation	-10R1	6-21-61	67	1,170	7.9	86 4.29	5.0 0.41	172 7.48	1.0 0.02	249 4.08	276 5.75	96 2.71	0.2 0.00	0.3 0.02	0.52	24		783 61 235 31 DWR			
Houchin Farms irrigation and domestic	-36N1	6-21-61	67	1,140	7.0	85 4.24	12 0.97	144 6.26	1.3 0.03	219 3.59	288 6.00	77 2.17	0.5 0.01	0.3 0.02	0.54	28		745 54 261 81 DWR			
Crawford irrigation	28S/23E-25F1	7-5-61	69	358	7.6	13 0.65	0.1 0.01	56 2.44	0.3 0.01	49 0.80	53 1.10	40 1.13	3.7 0.06	0.4 0.02	0.13	18		209 78 33 0 DWR			

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million equivalents per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Total ppm
	<u>MD84X</u>							<u>KERN COUNTY (Cont.)</u>													
B. Isaac Irrigation	28S/25E-17L1	7-5-61	75	188	8.1	9.1 0.45	0.8 0.07	32 1.39	0.8 0.02	0 0.00	90 1.48	9.5 0.20	6.5 0.18	1.6 0.02	0.3 0.02	0.11	19		26	0	DWR
S. A. Camp #12 Irrigation	28S/26E-11A1	6-28-61	78	507	7.8	24 1.20	0.5 0.04	72 3.13	1.1 0.03	0 0.00	53 0.87	60 1.25	81 2.28	1.4 0.02	0.2 0.01	0.05	20		62	19	DWR
Kern County Land Co. Irrigation	-30A1	6-29-61	74	848	7.9	107 5.34	4.5 0.37	57 2.48	2.6 0.07	0 0.00	79 1.29	216 4.50	81 2.28	10 0.16	0.3 0.02	0.14	23		286	221	DWR
Irrigation	28S/27E-23D1	10-5-61		521		4.8 0.24	0.0 0.00	106 4.61	0.5 0.01	0 0.00	82 1.34	26 2.00	51 1.44	0.2 0.00	0.2 0.02	0.0	14		12	0	DWR
Houchin Ranch domestic	29S/23E-24H1	6-21-61	66	440	8.1	22 1.10	1.0 0.08	64 2.78	0.4 0.01	0 0.00	96 1.57	86 1.79	23 0.65	0.4 0.01	0.3 0.02	0.15	17		59	0	DWR
B. Curtis Irrigation	29S/25E-10W1	6-29-61	72	407	8.1	45 2.24	1.0 0.08	20 1.30	1.5 0.04	0 0.00	79 1.29	40 0.83	51 1.44	4.4 0.07	0.2 0.01	0.11	23		116	51	DWR
M. F. Grimes Irrigation	29S/26E-35K1	8-1-61	65	223	8.1	24 1.20	0.4 0.32	17 0.74	0.9 0.02	0 0.00	101 1.66	17 0.35	9.0 0.25	0.8 0.01	0.2 0.01	0.1	28		76	0	DWR
D. C. McCann Irrigation	29S/28E-12E1	7-5-61	76	412	8.2	22 1.10	1.4 0.12	64 2.78	2.8 0.07	0 0.00	160 2.62	47 0.98	15 0.42	1.9 0.03	0.1 0.00	0.14	26		61	0	DWR
Kern Growers Exch. domestic and irrigation	-36U1	7-17-61	81	3,330	7.6	431 22.50	93 7.67	198 8.61	12 0.31	0 0.00	140 2.29	946 19.70	520 14.66	130 2.10	0.1 0.00	0.19	28		2,450	14,000	DWR
Kern Oil Company Irrigation	29S/29E-34W1	7-31-61	79	632	8.1	31 1.55	5.5 0.45	108 4.70	2.7 0.07	0 0.00	344 5.64	0 0.00	43 1.21	0.5 0.01	0.1 0.00	0.18	28		95	0	DWR
L and P Dadini domestic	30S/23E-1C1	6-21-61	70	561	8.4	93 0.46	0.0 0.00	99 4.31	0.4 0.01	2 0.07	32 0.52	15 0.31	138 3.89	0.4 0.01	0.6 0.03	0.41	17		23	0	DWR
State of California Irrigation	30S/24E-14H1	8-1-61	72	715	8.1	80 3.99	0.1 0.01	73 3.18	1.1 0.03	0 0.00	122 2.00	219 4.56	26 0.73	0.1 0.00	0.1 0.01	0.2	22		200	100	DWR
Kern County Land Co. domestic and irrigation	30S/27E-21D1	8-7-61	76	538	8.3	62 3.09	13 1.03	33 1.44	2.3 0.06	2 0.07	192 3.15	55 1.15	40 1.13	2.3 0.09	0.2 0.01	0.2	21		206	45	DWR
C. Samuels domestic and irrigation	30S/28E-11R2	8-7-61	76	529	8.2	44 2.20	12 1.00	47 2.04	4.6 0.12	0 0.00	212 3.47	51 1.06	30 0.85	2.7 0.04	0.3 0.02	0.21	27		160	0	DWR

a. Determined by addition of constituents

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC),

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Manganese (Mn), Zinc (Zn),

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm	
	<u>MDBM</u>																							
Douglas Oil Company domestic and industrial	30S/28E-25A1	8-7-61	78	463	8.1	37 1.85	11 0.91	44 1.91	4.6 0.12	0 0.00	216 3.54	36 0.75	18 0.51	1.8 0.03	0.2 0.02	0.23	26			285	40	138	0	DWR
	30S/29E-502	7-17-61	79	1,510	7.4	147 7.34	42 3.45	112 4.82	7.6 0.19	0 0.00	219 3.59	200 4.16	177 4.99	151 2.44	0.1 0.00	0.08	36			981	30	360		DWR
	-15G1	7-28-61	71	1,050	7.9	102 5.09	25 2.04	71 3.09	6.1 0.16	0 0.00	116 1.90	225 4.68	130 3.67	11 0.18	0.6 0.03	0.14	18			646	30	357	262	DWR
	-20A1	7-18-61	71	731	7.8	65 3.24	25 2.05	48 2.09	5.6 0.14	0 0.00	193 3.16	84 1.75	62 1.75	37 0.60	0.4 0.02	0.14	22			451	28	265	107	DWR
	-27J1	7-17-61	64	892	8.3	85 4.24	27 2.21	58 2.52	5.0 0.13	0 0.00	250 4.10	21 1.89	52 1.47	105 1.69	0.4 0.02	0.3	32			579	28	323	118	DWR
R. Randuchi irrigation	31S/24E-28B1	7-21-61	78	5,590	7.8	522 26.05	150 12.31	725 31.54	12 0.31	0 0.00	21 1.49	2160 44.97	852 24.03	19 0.31	0.1 0.00	4.5	52			4,540	45	1920	1840	DWR
Houchin Farms irrigation	31S/25E-25H1	6-22-61	73	441	8.2	17 0.85	0.8 0.07	74 3.22	1.2 0.03	0 0.00	112 1.84	95 1.98	6.3 0.18	0.6 0.01	4.0 0.21	0.50	22			293	77	46	0	DWR
Palm Dairy domestic	31S/28E-7R3	7-18-61	71	516	8.2	48 2.40	4.6 0.38	52 2.26	2.0 0.05	0 0.00	178 2.92	66 1.37	31 0.87	0.8 0.01	0.4 0.02	0.2	20			323	44	139	0	DWR
J. Bueby domestic and irrigation	31S/30E-16A1	7-31-61	84	491	7.5	21 1.05	6.4 0.53	73 3.18	4.4 0.11	0 0.00	188 3.08	15 0.31	40 1.13	14 0.22	1.4 0.07	2.6	20			291	65	79	0	DWR
L. A. Athletic Club irrigation	32S/27E-6D1	6-22-61	74	381	8.2	11 0.55	0.4 0.03	72 3.13	0.8 0.02	0 0.00	123 2.02	64 1.33	10 0.28	0.5 0.01	2.6 0.14	0.21	30			252	84	29	0	DWR
Kern County Land Co. irrigation and domestic	-16R1	8-7-61		952	8.1	115 5.74	8.0 0.66	90 3.92	3.1 0.08	0 0.00	222 3.64	271 5.64	27 0.76	7.2 0.12	1.0 0.05	0.5	55			587	38	320	138	DWR
H. M. Harford irrigation and domestic	32S/28E-12F1	7-25-61	75	408	8.2	29 1.45	5.7 0.47	49 2.13	2.2 0.06	0 0.00	165 2.70	40 0.83	18 0.51	0.4 0.01	0.8 0.04	0.15	20			246	52	96	0	DWR
C. B. Dickey irrigation	32S/29E-11R1	7-25-61	83	2,050	7.7	131 6.54	31 2.57	246 10.70	5.4 0.14	0 0.00	182 2.98	128 2.66	501 14.13	1.7 0.03	0.6 0.03	0.77	24			1,160	54	456	307	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Polysulfate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Barium (Ba)	Silica (SiO ₂)	
Rey Brothers Irrigation S. Serfisen domestic Rey Brothers Irrigation H. Berg Irrigation	MDB&M 15S/10E-200 -21L1 -22D1 15S/11E-30F	7-18-61 7-18-61 7-18-61 7-18-61	78 87 75 73	1,240 1,340 1,410 1,260	7.9 7.9 7.8 7.4	93 4.64	49 4.01	108 4.70	3.1 0.08	0 0.00	335 5.49	331 6.89	46 1.39	6.3 0.10	0.3 0.02	1.7	44	433	158	DWR
						91 4.54	54 4.41	123 5.35	2.4 0.09	0 0.00	248 4.06	438 9.12	45 1.27	20 0.32	0.5 0.03	1.1	44	448	245	DWR
						126 6.29	52 4.28	113 4.92	3.1 0.08	0 0.00	255 4.18	493 10.26	44 1.24	9.6 0.15	0.6 0.03	1.3	42	529	320	DWR
						95 4.74	42 3.49	116 5.05	2.8 0.07	0 0.00	266 4.36	389 8.10	42 1.18	9.0 0.14	0.4 0.02	1.7	43	412	194	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1961

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conduct- ance (micro- mhos at 25° C)	pH	Mineral constituents in parts per million										Total dis- solved solids in ppm	Per- cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Fluor- ide (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm	
	MIRAM							LAHONTAN REGION (NO. 6)	SURPRISE VALLEY (6-1)															
L. Cockrell, domestic	40N/16E-11G1	8-22-61	58	211	8.0	26 1.30	5.1 0.42	13 0.56	1.7 0.04	0	132 2.16	0.6 0.01	1.9 0.05	1.2 0.02	0.1 0.00	0.06	25			140	24	86	0	DNR
H. J. Powers, irrigation	-13R1	8-22-61	56	214	8.3	25 1.25	6.4 0.53	11 0.43	3.7 0.09	0	134 2.20	0.5 0.01	1.9 0.05	1.4 0.02	0.1 0.00	0.05	41			157	20	89	0	DNR
D. I. Grove, domestic	-36F1	8-22-61	66	336	8.5	32 1.60	14 1.14	23 1.00	2.6 0.07	4	202 3.31	8.1 0.17	2.8 0.08	1.3 0.02	0.2 0.01	0.07	46	As 0.00		229	26	137	0	DNR
B. Cambron, stock & fish pond	40N/17E-20C1	8-22-61	58	385	8.3	27 1.35	6.9 0.57	41 1.78	5.8 0.15	0	133 2.18	4.1 0.35	2.5 0.70	0.5 0.01	0.3 0.02	0.22	57			270	46	96	0	DNR
L. Heryford	41N/16E-4G1	8-22-61	60	210	8.3	25 1.25	2.8 0.23	18 0.78	0.8 0.02	0	128 2.10	3.4 0.07	2.3 0.06	0.5 0.01	0.0 0.00	0.07	27			143	34	74	0	DNR
H. Melitz, domestic	25C3	8-22-61	63	189	8.0	5.6 0.28	1.0 0.03	34 1.43	2.1 0.05	0	83 1.36	1.6 0.33	6.5 0.13	0.3 0.00	0.6 0.03	0.27	33			140	78	18	0	DNR
M. Urrula, irrigation	42N/16E-4F1	8-23-61	54	378	8.3	14 2.20	10 0.34	22 0.96	1.0 0.02	0	198 3.24	14 0.29	7.8 0.22	14 0.22	0.1 0.00	0.10	32			242	24	152	0	DNR
Surprise Valley Lumber Co., domestic & industrial	-6R2	8-23-61	48	307	8.1	39 1.95	6.7 0.55	16 0.70	1.2 0.03	0	195 3.03	6.9 0.14	0.1 0.00	1.4 0.02	0.1 0.00	0.04	32			194	22	125	0	DNR
L. B. Laxague, domestic & stock	-21L1	8-22-61	57	230	8.3	26 1.30	2.9 0.24	23 1.00	0.9 0.02	0	142 2.33	4.0 0.08	2.3 0.06	0.9 0.01	0.1 0.00	0.09	29			159	39	77	0	DNR
E. Cook, domestic	-34F1	8-22-61	60	267	8.3	16 0.80	2.7 0.22	42 1.83	2.7 0.07	0	170 2.79	1.2 0.02	2.8 0.08	0.3 0.00	0.1 0.00	0.12	36			188	63	51	0	DNR
G. W. Warren, domestic	43N/16E-20B1	8-23-61	65	274	8.3	4.9 0.24	0.2 0.02	60 2.61	0.7 0.02	0	163 2.67	3.3 0.07	0.4 0.01	6.1 0.10	0.1 0.00	0.12	25			181	90	13	0	DNR
F. Arreche, domestic & stock	-33W3	8-23-61	62	289	8.3	20 1.00	3.4 0.28	42 1.83	0.6 0.02	0	172 2.82	4.1 0.08	0.6 0.02	6.0 0.10	0.1 0.00	0.12	25	As 0.00		186	58	64	0	DNR
M. Quirk, irrigation	44N/16E-6E2	8-22-61	75	641	8.3	4.8 0.24	0.2 0.02	48 2.04	2.9 0.07	0	276 4.52	0.0 0.00	69 1.94	1.2 0.02	0.8 0.04	5.4	68	As 0.02		436	95	13	0	DNR
B. Patch, irrigation	-29F1	8-23-61		492	8.4	2.1 0.10	0.0 0.00	120 5.22	1.7 0.04	5	294 4.92	0.5 0.01	1.4 0.04	4.2 0.07	2.3 0.12	0.45	53			336	97	5	0	DNR
L. Banks, domestic	45N/16E-17M	8-23-61	63	280	8.3	36 1.80	10 0.36	10 0.44	2.3 0.06	0	176 2.88	1.3 0.03	3.7 0.10	2.4 0.04	0.1 0.00	0.09	42			194	14	133	0	DNR
C. A. Youngman, domestic	46N/16E-4X1	8-22-61	65	217	7.4	16 0.80	8.8 0.72	14 0.61	6.1 0.16	0	129 2.11	6.6 0.14	1.6 0.04	1.7 0.03	0.2 0.01	0.06	56			174	27	76	0	DNR
R. W. Peterson, domestic	-13C1	8-22-61	65	466	7.9	37 1.85	14 1.17	44 1.91	5.6 0.14	0	259 4.24	2.6 0.54	12 0.34	0.4 0.01	0.4 0.02	0.33	53			320	38	151	0	DNR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC).

d. Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (DWR) as indicated.

e. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{1000}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
J. Stookberry, stock	46N/16E-25R2	8-22-61	68	441	8.3	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										312	57	89	0	IMR			
H. Talbot, irrigation	-20E1	8-22-61	56	544	8.5	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										360	98	4	0	IMR			
E. Williams, stock	34N/13E-18B1	8-9-61	56	578	8.0	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										378	27	218	0	IMR			
G. Drusmond, domestic	34N/14E-15E1	8-9-61	56	321	7.6	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										186	23	122	0	IMR			
Southern Pacific R.R., domestic & industrial	-22A1	8-9-61	64	257	7.5	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										169	20	106	0	IMR			
T. Garste, stock	34N/15E-21L1	8-9-61	62	128	7.3	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										93	65	18	0	IMR			
Rock Hill Ranch, stock	35N/12E-20B1	8-9-61	70	282	8.0	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										202	22	116	0	IMR			
Vacant property	-24R1	8-9-61	1030	8.3	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										668	56	221	0	IMR				
State of California, domestic	35N/13E-26J1	8-9-61	697	8.3	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										442	38	227	0	IMR				
F. Jones, stock	35N/14E-15N1	8-9-61	236	8.3	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										169	22	96	0	IMR				
R. Marr, stock	-24O2	8-9-61	270	8.0	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										176	55	60	0	IMR				
Unknown	36N/12E-29E1	8-9-61	452	8.3	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										303	22	184	0	IMR				
Pit River Ranch, domestic	37N/13E-20Q1	8-9-61	1880	8.2	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										1220	40	580	260	IMR				
R. Brasher, domestic	22N/17E-4K1	8-10-61	67	393	7.7	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										267	39	120	0	IMR			
P. Hall, unused	25N/17E-21N3	8-7-61	61	292	8.0	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										186	92	11	0	IMR			
F. Flux, irrigation	26N/15E-3F1	8-7-61	68	214	7.8	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										144	39	60	0	IMR			
Lora Garnier, irrigation	26N/16E-15E1	8-7-61	60	526	7.5	LABONTIAN REGION (NO. 6), SURPRISE VALLEY (6-1) (Continued)										332	47	135	0	IMR			

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL) or State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{100}$ except as shown.

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d. Determined by addition of constituents.
e. Gravimetric determination.
f. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), and the U.S. Environmental Protection Agency, Environmental Systems Laboratory (E.S.L.).
g. Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
h. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as dissolved.
i. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as total.

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per- cent sodium	Hardness as CaCO ₃		Analyzed by c		
																		Silica (SiO ₂)	Other constituents ^d		Total ppm	N.C. ppm
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- tro- ride (NO ₃)	Fluo- ride (F)							
	<u>MOD&M</u>					<u>LARONTA REGION (NO. 6)</u>	<u>HONEY LAKE VALLEY (6-4) (Continued)</u>															
F. C. Couper domestic	29N/14E-18R1	8-10-61	70	1240	8.0	19 0.95	8.9 0.73	258 11.22	5.7 0.14	0 0.00	471 7.72	211 4.39	25 0.70	22 0.35	1.6 0.08	1.1	60		84	0	DMR	
State of California Irrigation	29N/15E-21M1	8-8-61	64	870	7.7	7.0 0.35	5.5 0.45	186 8.09	4.7 0.12	0 0.00	439 7.20	8.6 0.18	45 1.27	1.1 0.02	0.7 0.04	0.48	55		530	40	DMR	
J. Devitt domestic	-30A2	8-8-61	63	630	7.0	4.6 2.30	1.6 1.30	68 2.96	4.1 0.10	0 0.00	296 4.85	58 1.21	13 0.37	0.6 0.01	0.3 0.02	0.20	55		407	180	DMR	
Southern Pacific R.R. domestic and industrial	29N/16E-30I1	8-8-61	74	326	7.4	6.9 0.34	2.2 0.18	49 2.13	8.0 0.20	0 0.00	106 1.74	28 0.58	18 0.51	3.3 0.05	0.2 0.01	0.26	42		210	26	DMR	
California Pacific Utility Company industrial	30N/12E-33W2	8-10-61	74	548	7.7	21 1.05	5.2 0.43	79 3.44	3.2 0.08	0 0.00	105 1.72	102 2.12	41 1.15	1.8 0.03	1.0 0.05	0.97	44		351	74	DMR	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

d. Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

e. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{0.00}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
																Fluoride (F)	Boron (B)		Silica (SiO ₂)	Other constituents		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)								Nitrate (NO ₃)	
SOUTH TAHOE VALLEY (6-5.01)																						
F. Parker domestic	12N/18E-301	9-12-61	54	65	7.3	5.6 0.28	2.2 0.18	4.0 0.17	0.4 0.01	0 0.00	39 0.84	1.0 0.02	0.2 0.01	0.5 0.01	0.1 0.01	0.0	25		58	27	0	DWR
C. Hoffman domestic	3F1	9-12-61	57	129	8.0	16 0.80	3.6 0.30	5.5 0.24	0.2 0.01	0 0.00	82 1.34	0.0 0.00	0.0 0.00	0.2 0.00	0.0 0.00	0.0	33		98	18	0	DWR
R. Doud domestic	5L1	9-12-61	64	95	7.6	5.6 0.28	4.9 0.40	5.0 0.22	0.6 0.02	0 0.00	57 0.93	0.0 0.00	0.2 0.01	0.5 0.01	0.0 0.00	0.0	41		86	24	0	DWR
Gardner Mt. Water Co. domestic	5P1	9-12-61	52	69	7.5	6.4 0.32	1.9 0.16	4.3 0.19	0.6 0.02	0 0.00	41 0.67	0.0 0.00	0.0 0.00	0.5 0.01	0.1 0.01	0.0	32		66	28	0	DWR
State of California domestic	2911	9-12-61	58	81	7.7	7.6 0.38	0.7 0.06	6.8 0.30	1.2 0.03	0 0.00	42 0.69	0.0 0.00	1.2 0.03	0.3 0.00	0.1 0.01	0.0	20		59	39	0	DWR
NORTH TAHOE VALLEY (6-5.02)																						
R. E. Rauscher domestic	14N/16E-101	10-18-61		143	7.4	14 0.70	6.1 0.50	5.1 0.22	1.0 0.02	0 0.00	85 1.39	0.0 0.00	1.6 0.04	0.4 0.01	0.0	0.1	31	Al 0.06 Cu 0.01 Fe 1.1 Pb 0.03 Mn 0.07 Zn 1.0	101	15	0	DWR
G. Minor domestic	1K1	10-17-61		141	7.3	13 0.65	7.7 0.63	4.2 0.18	1.4 0.04	0 0.00	91 1.49	0.0 0.00	0.2 0.00	0.1 0.00	0.0	0.0	38	Cu 0.03 Fe 0.46 Mn 0.05 Zn 7.1	110	12	0	DWR
T. L. Quinn domestic	14N/17E-8N1	10-18-61		103	7.3	12 0.60	1.7 0.14	5.1 0.22	1.4 0.04	0 0.00	55 0.90	0.0 0.00	2.3 0.06	1.2 0.02	0.1 0.00	0.02	30	Al 0.16 Cu 0.01 Fe 0.15 Zn 0.20	81	22	0	DWR
Douglas Dale Lodge domestic	15N/16E-24A1	10-18-61		158	7.3	17 0.85	6.2 0.51	3.8 0.16	1.4 0.04	0 0.00	85 1.39	0.0 0.00	3.3 0.09	4.3 0.07	0.0	0.02	33	Al 0.04 Cu 0.01 Fe 0.17 Zn 1.7	111	10	0	DWR
Town and Country Lodge domestic	2501	10-18-61		109	7.3	12 0.60	3.9 0.32	3.8 0.16	1.3 0.03	0 0.00	65 1.06	0.0 0.00	0.7 0.02	0.4 0.01	0.1 0.00	0.0	40	Al 0.05 Cu 0.02 Fe 0.20 Zn 1.2	94	14	0	DWR
State of California domestic	15N/17E-6J1	10-19-61	49	171	7.9	15 0.75	8.6 0.71	5.2 0.23	3.3 0.03	0 0.00	106 1.74	0.6 0.01	0.7 0.02	0.4 0.01	0.0	0.01	38	Al 0.05 Zn 0.01	124	13	0	DWR
Tahoe City Lumber Co. domestic	7E1	10-17-61		119	7.4	10 0.50	4.9 0.40	6.3 0.27	2.4 0.06	0 0.00	69 1.13	2.6 0.05	1.6 0.04	0.6 0.01	0.0	0.03	34	Al 0.01 Cu 0.03 Fe 0.81 Zn 6.0	96	22	0	DWR
Winding Creek Mutual Water Company domestic	16N/16E-28E1	10-19-61	49	247	4.6	22 1.10	4.6 0.38	6.1 0.26	0.8 0.02	0 0.00	0 0.00	97 2.02	1.9 0.05	0.5 0.01	0.1 0.01	0.0	37	Al 3.4 Fe 0.12 Mn 0.11 Zn 0.24	173	12	74	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.08}{0.00}$ except as shown

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents		
State of California domestic	16N/16E-32D1	10-19-61	48	232	7.7	33 1.65	3.3 0.27	5.2 0.23	0.7 0.02	0 0.00	29 0.60	12 0.34	2.1 0.03	0.1 0.00	0.02	12	Al 0.03 Fe 0.30 Zn 0.02	10	96	39	DWR
	32D2	10-19-61	48	108	7.5	15 0.75	1.1 0.09	3.0 0.13	0.4 0.01	0 0.00	8.7 0.18	1.9 0.05	2.2 0.04	0.0 0.00	0.02	11	Al 0.12 Cu 0.01 Fe 1.1 Pb 0.01 Zn 0.02	13	42	8	DWR
Rio del Club domestic	16N/17E-13H1	10-18-61	48	104	7.4	8.1 0.40	6.6 0.54	4.0 0.17	0.5 0.01	0 0.00	63 1.03	0.6 0.02	1.0 0.02	0.0 0.00	0.02	49	Cu 0.02 Fe 0.32 Zn 6.1	15	47	0	DWR
H. Chanda domestic	14B1	10-18-61		195	7.9	21 1.05	6.7 0.55	9.2 0.40	3.4 0.09	0 0.00	121 1.98	1.6 0.04	2.0 0.03	0.1 0.00	0.03	47	Al 0.01 Cu 0.03 Fe 0.01 Zn 1.7	19	80	0	DWR
M. Martin domestic	14C1	10-18-61		248	8.0	26 1.30	9.5 0.78	9.4 0.41	4.5 0.12	0 0.00	150 2.46	2.9 0.08	1.8 0.03	0.0 0.00	0.02	39	Al 0.01 Cu 0.02 Fe 0.05 Zn 3.3	16	104	0	DWR
Brockway Hotel Spring	16N/18E-30B1	10-18-61		629	8.5	3.3 0.16	0.5 0.04	119 5.18	3.1 0.08	4 0.13	39 0.81	114 3.21	0.2 0.00	3.5 0.18	3.4	81	As 0.28 Fe 0.02	95	10	0	DWR
CARSON VALLEY (6-6)																					
A. Riggs domestic	11N/19E-24B1	9-12-61		143	7.3	14 0.70	2.9 0.24	9.2 0.40	1.4 0.04	0 0.00	80 1.31	1.0 0.03	4.2 0.07	0.1 0.01	0.0	30		29	47	0	DWR
Alpine County Schools domestic	35D2	9-12-61		124	7.1	11 0.55	2.8 0.23	8.3 0.36	1.5 0.04	0 0.00	68 1.11	0.2 0.01	0.2 0.00	0.1 0.01	0.0	31		89	39	0	DWR
Alpine County Road Department domestic	35K1	9-12-61		82	7.8	6.0 0.30	2.9 0.24	5.0 0.22	0.9 0.02	0 0.00	46 0.75	0.5 0.01	0.2 0.00	0.1 0.01	0.0	34		73	27	0	DWR
Alpine County Schools domestic	11N/20E-7M1	9-12-61		112	7.2	11 0.55	2.8 0.23	5.1 0.22	1.8 0.05	0 0.00	52 0.85	1.5 0.04	7.2 0.12	0.1 0.01	0.0	27		82	39	0	DWR
TRUCKEE VALLEY (6-67)																					
Donner Lake Development Company domestic	17N/16E-7M1	10-19-61	49	64	6.9	5.6 0.28	1.0 0.08	3.8 0.16	1.2 0.03	0 0.00	27 0.44	3.0 0.08	0.4 0.01	0.0 0.00	0.02	10	Al 0.04 Fe 0.45 Pb 0.01 Zn 1.2	29	18	0	DWR
Truckee P.U.D. domestic	8M1	10-19-61		129	7.7	13 0.65	6.7 0.55	3.2 0.14	1.2 0.03	0 0.00	85 1.39	0.0 0.00	0.7 0.01	0.0 0.00	0.02	34		101	60	0	DWR
Truckee P.U.D. domestic	14F1	10-19-61	49	150	7.8	15 0.75	8.1 0.67	3.8 0.16	1.2 0.03	0 0.00	96 1.57	0.7 0.02	0.9 0.01	0.0 0.00	0.01	32	Fe 0.04 Zn 0.02	10	71	0	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{100}$ except as shown.

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						equivalents per million												Total ppm	N.C. ppm						
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)	Silica (SiO ₂)			
Truckee P.U.D. domestic	15G1	10-19-61	49	136	7.7	12 0.60	8.8 0.72	3.0 0.13	1.0 0.02	0	89 1.46	0.0 0.00	0.0 0.00	0.7 0.01	0.0 0.00	0.01	34	104	9	66	0	DNR			
	16L1	10-19-61	49	155	7.8	15 0.75	6.7 0.55	4.7 0.20	2.7 0.07	0	78 1.28	0.8 0.02	8.3 0.23	1.1 0.02	0.0 0.00	0.02	38	115	13	65	1	DNR			
	17F1	10-19-61		107	7.4	10 0.50	3.6 0.30	4.6 0.20	2.8 0.07	0	55 0.09	1.0 0.02	3.9 0.11	0.9 0.01	0.0 0.00	0.02	36	90	19	40	0	DNR			
										TRUCKEE VALLEY (6-67) (Cont.)															
D. Redley domestic	8N/23B-16P1	9-13-61	62	259	8.2	23 1.15	7.4 0.61	23 1.00	3.1 0.08	0	154 2.52	7.1 0.15	2.4 0.07	4.6 0.07	0.2 0.01	0.10	28	175	35	88	0	DNR			
J. Kindel domestic	28E3	9-12-61	62	273	7.7	18 0.90	1.7 0.14	34 1.48	1.4 0.04	0	79 1.29	39 0.81	13 0.37	0.9 0.01	3.1 0.16	0.30	27	177	58	52	0	DNR			
Mono County Road Department domestic	29C2	9-12-61	62	121	7.2	12 0.60	1.9 0.16	8.7 0.38	1.6 0.04	0	66 1.08	4.9 0.10	1.4 0.04	0.0 0.00	0.1 0.00	0.06	8.5	72	32	38	0	DNR			
H. Williams domestic	9N/22B-2401	9-13-61	58	233	7.6	22 1.10	5.6 0.46	17 0.74	2.4 0.06	0	107 1.75	9.9 0.21	12 0.34	1.0 0.02	0.4 0.02	0.46	24	148	31	78	0	DNR			
E. Kinzy domestic	24M1	9-13-61		210	7.7	19 0.95	5.7 0.47	15 0.65	2.4 0.06	0	106 1.74	9.9 0.21	4.2 0.12	3.6 0.06	0.4 0.02	0.10	32	144	30	71	0	DNR			
East Camp Ranch domestic	9N/23B-20P1	9-13-61		232	7.8	23 1.15	4.7 0.39	21 0.91	1.2 0.03	0	133 2.18	5.9 0.12	2.5 0.07	1.8 0.03	0.7 0.04	0.22	41	167	37	77	0	DNR			
A. Sclarini domestic	30C2	9-13-61		339	7.8	13 0.65	1.6 0.13	52 2.26	2.4 0.06	0	93 1.52	16 0.33	39 1.10	1.5 0.02	3.4 0.18	2.6	37	214	73	39	0	DNR			
Bellview Ranch domestic	32A1	9-13-61		359	8.3	10 0.50	1.4 0.12	68 2.96	1.5 0.04	0	148 2.42	16 0.33	15 0.42	3.6 0.06	7.6 0.10	3.0	45	244	82	31	0	DNR			
										BRIDGEPORT VALLEY (6-8)															
Buckeye Hot Spring	4N/24B-4A1	9-13-61		1440	8.2	13 0.65	3.3 0.27	320 13.92	8.7 0.22	0	389 6.35	347 7.22	29 0.82	0.8 0.01	2.8 0.52	1.2	73	997	92	46	0	DNR			
Hunewill Ranch domestic	13E1	9-13-61		110	7.0	14 0.70	2.2 0.18	4.8 0.21	1.6 0.04	0	61 1.00	4.1 0.08	0.4 0.01	0.1 0.02	0.1 0.06	0.02	23	81	18	44	0	DNR			

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 1000 except as shown

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃) (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents		Total ppm	N.C. ppm	
										BRIDGEPORT VALLEY (6-B) (Cont.)													
F. Conner domestic	4N/25E-4B1	9-13-61		750	7.9	48 2.40	20 1.62	74 3.22	11 0.28	149 2.44	230 4.79	14 0.39	0.9 0.01	0.3 0.02	0.28	104		575	43	201	79	DWR	
J. Van Dyck domestic	4F1	9-13-61		2920	6.6	85 4.24	43 3.53	551 23.97	38 0.97	1210 19.83	464 9.66	118 3.33	4.3 0.07	1.4 0.07	5.1	71		1980	73	389	0	DWR	
R. Snider domestic	5N/24E-25G1	9-13-61		137	7.2	16 0.86	2.9 0.24	5.7 0.25	2.0 0.03	76 1.24	4.6 0.10	0.1 0.00	0.5 0.01	0.0 0.00	0.04	19		88	19	52	0	DWR	
K. C. Stewart domestic	5N/25E-28K1	9-14-61		416	8.1	32 1.60	13 1.08	31 1.35	10 0.26	211 3.46	34 0.71	3.6 0.10	0.8 0.01	0.2 0.01	0.12	61		290	31	134	0	DWR	
Bridgeport P.U.D. municipal	28Q1	9-13-61		353	7.3	28 1.40	9.7 0.80	26 1.13	8.9 0.23	188 2.98	21 0.44	4.9 0.14	1.7 0.03	0.2 0.01	0.08	60		249	32	110	0	DWR	

a. Determined by addition of constituents

b. Gravimetric determination

c. Analysis by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL) or State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{mg}}{\text{kg}}$ except as shown

1962

o. Determined by addition of constituents.

a. Gravimetric determination.
b. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), U.S. Geological Survey, Office of Water Resources (D.W.R.) as indicated.
c. Terminal Testing Laboratory (T.T.L.), U.S. Army Corps of Engineers (U.S.A.C.E.).
d. Iron (Fe), Aluminum (Al), Arsenic (As), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as average, except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents		Total ppm	N.C. ppm	
L. D. Parsons irrigation	45N/1E-2L1	8-24-62	-	148	8.0	11	6.1	12	1.7	0	6.2	0.0	0.0	0.1	0.1	31	108	32	0	USAC			
						0.53	0.50	0.04	0.00	0.13	0.00	0.00	0.00	0.01	0.01								
A. Beck irrigation	-9C2	9-26-62	58	162	8.0	11	6.8	14	2.4	0	5.8	2.5	0.0	0.1	0.1	128	33	0	USAC				
						0.59	0.56	0.60	0.06	0.00	0.12	0.07	0.00	0.01	0.01								
D. Mills irrigation	45N/2W-1P1	8-25-62	53	226	8.2	20	12	10	2.4	0	16	0.0	12	0.1	0.0	32	160	18	2	USAC			
						0.98	1.00	0.95	0.06	0.00	0.35	0.00	0.20	0.01	0.01								
K. Holbrook irrigation	46N/1E-15D1	8-24-62	67	203	8.2	7.6	4.4	32	7.0	0	6.7	3.9	0.0	0.1	0.1	38	146	60	0	USAC			
						0.38	0.36	1.70	0.18	0.00	0.14	0.11	0.00	0.01	0.01								
R. Cheyne irrigation	46N/1W-2F1	8-25-62	55	370	8.5	20	13	43	6.8	9.6	20.0	3.9	8.6	0.1	0.1	32	226	46	0	USAC			
						1.01	1.07	1.87	0.17	0.32	0.19	0.11	0.14	0.01	0.01								
Butte Valley Farms irrigation	47N/1W-34Q1	8-25-62	55	470	8.6	25	19	24	11	15	10	5.7	12	0.1	0.2	39	310	42	0	USAC			
						1.25	1.55	2.35	0.29	0.51	0.20	0.16	0.20	0.01	0.01								
Spring School domestic (unused)	47N/2W-20Q1	8-15-62	57	315	8.0	23	13	21	8.5	0	0.0	1.8	1.8	0.1	0.1	20	186	27	0	USAC			
						1.14	1.08	0.90	0.22	0.00	0.00	0.05	0.03	0.01	0.01								
E. Spada domestic	42N/5W-20L1	9-6-62	-	350	8.2	18	24	28	2.6	0	0.5	4.6	0.0	0.2	0.1	47	236	29	145	0	USAC		
						0.86	2.01	1.20	0.07	0.00	0.01	0.13	0.00	0.01	0.01								
G. G. Maxwell domestic	42N/6W-10V1	9-6-62	-	500	8.3	15	65	2.0	0.5	8	1.9	5.3	7.0	0.1	0.0	39	330	3	308	0	USAC		
						0.77	5.39	0.20	0.01	0.26	0.04	0.15	0.12	0.01	0.01								
W. H. Lenden domestic	42N/9W-27K1	9-6-62	-	64	7.6	3.6	1.2	2.5	0.3	0	1.9	2.1	0.0	0.1	0.0	12	34	45	14	0	USAC		
						0.18	0.10	0.24	0.01	0.00	0.04	0.06	0.00	0.01	0.01								
Big Springs Irrigation District	43N/5W-2C1	9-6-62	52	250	8.3	16	12	20	1.8	3	11	9.2	0.0	0.1	0.2	42	160	32	89	0	USAC		
						0.80	0.97	0.87	0.05	0.09	0.23	0.28	0.00	0.01	0.01								
Dougherty and Sons irrigation	43N/6W-21R1	9-21-62	60	310	8.3	28	20	8.8	1.1	5	8.2	1.1	4.5	0.1	0.0	23	200	11	154	0	USAC		
						1.91	1.66	0.38	0.03	0.16	0.17	0.03	0.07	0.01	0.01								
J. C. Martin irrigation	44N/4W-6M1	9-6-62	57	545	8.4	21	17	50	2.0	7	20	21	10	0.1	1.1	42	364	35	198	0	USAC		
						2.57	1.38	2.18	0.05	0.24	0.42	0.60	0.16	0.01	0.01								

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), U.S. Agricultural Experiment Station, Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\mu\text{g/l}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicor-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-le (NO ₃)	Fluo-ride (F)			Boron (B)	Silico (SiO ₂)		Other constituents
S. D. Nelson domestic and irrigation	MDB&M 44N/5W-32F1	9-10-62		1120	8.5	95 4.72	70 5.71	122 5.30	3.6 0.09	20 0.66	453 7.44	5.8 0.12	2.3 0.04	0.1 0.01	1.4 0.01	42		41	372	0	USAC
						56 2.78	26 2.14	52 2.26	5.9 0.15	24 0.80	322 5.29	15 0.33	8.6 0.14	0.1 0.01	0.5 0.01	0.5	56	31	246	0	USAC
H. Silva irrigation	-34H1	9-6-62	58	628	8.7	13 0.67	1.2 0.10	223 9.70	2.5 0.06	21 0.72	861 14.1	7.7 0.16	0.0 0.00	2.0 0.10	3.5 0.01	17		92	39	0	USAC
						1.7 0.07	1.2 0.10	223 9.70	2.5 0.06	21 0.72	861 14.1	7.7 0.16	0.0 0.00	2.0 0.10	3.5 0.01	17		92	39	0	USAC
Siskiyou County Airport irrigation	45N/5W-6E1	8-24-62		900	8.6	1.7 0.07	1.2 0.10	223 9.70	2.5 0.06	21 0.72	861 14.1	7.7 0.16	0.0 0.00	2.0 0.10	3.5 0.01	17		92	39	0	USAC
						1.7 0.07	1.2 0.10	223 9.70	2.5 0.06	21 0.72	861 14.1	7.7 0.16	0.0 0.00	2.0 0.10	3.5 0.01	17		92	39	0	USAC
G. Weldon domestic	45N/6W-19E1	9-6-62		485	8.4	1.7 0.07	1.2 0.10	223 9.70	2.5 0.06	21 0.72	861 14.1	7.7 0.16	0.0 0.00	2.0 0.10	3.5 0.01	17		26	208	3	USAC
						1.7 0.07	1.2 0.10	223 9.70	2.5 0.06	21 0.72	861 14.1	7.7 0.16	0.0 0.00	2.0 0.10	3.5 0.01	17		26	208	3	USAC
Butte Valley Irrigation District irrigation	46N/2W-25R2	9-22-62	53	269	8.1	21 1.05	15 1.24	12 0.90	5.9 0.15	0 0.00	141 2.32	0.4 0.01	3.6 0.06	0.1 0.01	0.0	39		17	115	0	USAC
						21 1.05	15 1.24	12 0.90	5.9 0.15	0 0.00	141 2.32	0.4 0.01	3.6 0.06	0.1 0.01	0.0	39		17	115	0	USAC
C. R. McConnell irrigation	42N/9W-10Q1	8-31-62	57	228	8.3	23 1.13	15 1.15	6.6 0.29	0.8 0.02	3 0.11	139 2.23	7.2 0.15	2.3 0.04	0.1 0.01	0.0	25		11	114	0	USAC
						23 1.13	15 1.15	6.6 0.29	0.8 0.02	3 0.11	139 2.23	7.2 0.15	2.3 0.04	0.1 0.01	0.0	25		11	114	0	USAC
Dunsuir Water District municipal	43N/9W-20L	8-31-62	62	493	8.5	69 3.47	28 2.27	5.5 0.24	1.0 0.03	12 0.40	298 4.89	19 0.40	13 0.22	0.1 0.01	0.0	20		4	287	22	USAC
						69 3.47	28 2.27	5.5 0.24	1.0 0.03	12 0.40	298 4.89	19 0.40	13 0.22	0.1 0.01	0.0	20		4	287	22	USAC
F. Lockinsmeyer domestic	-8F1	8-31-62	69	178	7.9	25 1.27	4.5 0.37	5.0 0.20	0.4 0.01	0 0.00	96 1.57	5.8 0.12	11 0.18	0.1 0.01	0.0	14		11	82	3	USAC
						25 1.27	4.5 0.37	5.0 0.20	0.4 0.01	0 0.00	96 1.57	5.8 0.12	11 0.18	0.1 0.01	0.0	14		11	82	3	USAC
L. L. Lukes irrigation	-24F1	8-31-62	56	320	8.4	26 1.23	28 2.27	6.6 0.29	0.5 0.01	7 0.23	196 3.21	8.7 0.18	8.6 0.14	0.1 0.01	0.1	26		7	178	6	USAC
						26 1.23	28 2.27	6.6 0.29	0.5 0.01	7 0.23	196 3.21	8.7 0.18	8.6 0.14	0.1 0.01	0.1	26		7	178	6	USAC
L. L. Lukes irrigation	-24F2	8-31-62	57	410	8.4	48 2.40	29 2.39	6.1 0.27	0.5 0.01	8 0.27	264 4.33	10 0.21	10 0.15	0.1 0.01	0.1	24		5	238	8	USAC
						48 2.40	29 2.39	6.1 0.27	0.5 0.01	8 0.27	264 4.33	10 0.21	10 0.15	0.1 0.01	0.1	24		5	238	8	USAC
O. E. Heinke domestic and stock	44N/9W-34R1	8-31-62	62	293	8.2	40 1.98	12 1.01	7.2 0.31	0.8 0.02	0 0.00	167 2.74	6.7 0.19	13 0.22	0.1 0.01	0.0	19		9	-	-	USAC
						40 1.98	12 1.01	7.2 0.31	0.8 0.02	0 0.00	167 2.74	6.7 0.19	13 0.22	0.1 0.01	0.0	19		9	-	-	USAC

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), (U.S.A.C.) or State Department of Water Resources (D.W.R.), as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 80% except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent sodium	Hardness as CaCO ₃		Analyzed by
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)	
H. A. Reynolds domestic and irrigation	MDRM 31N/11W-8N1	6-6-62	-	109	7.7	11 0.55	4.5 0.37	3.8 0.16	1.0 0.02	0	66 1.03	1.0 0.02	0.0 0.00	0.3 0.00	0.0 0.00	0.02	0	DMR		
		6-6-62	-	248	7.6	29 1.45	8.9 0.73	7.6 0.33	0.4 0.01	0	144 2.36	7.1 0.15	2.8 0.03	0.4 0.01	0.1 0.00	0.05	0	DMR		
		6-6-62	-	269	8.2	23 1.15	14 1.13	11 0.48	0.2 0.00	0	143 2.34	4.0 0.03	11 0.31	5.6 0.09	0.1 0.00	0.27	0	DMR		
		6-6-62	-	342	8.1	35 1.75	10 0.83	15 0.65	2.7 0.07	0	153 2.51	12 0.25	18 0.51	5.4 0.09	0.1 0.00	0.02	4	DMR		
Jacoby Creek School domestic	HBM 5N/1E-4H2	8-9-62	66	399	7.9	23 1.15	21 1.69	30 1.30	3.3 0.03	0	214 3.51	1.0 0.02	26 0.73	0.8 0.01	0.1 0.00	0.0	0	USGS		
		9-6-62	-	305	8.5	18 0.90	12 1.02	28 1.22	1.6 0.04	4	157 2.57	0.0 0.00	21 0.59	0.0 0.00	0.0 0.00	0.0	0	USGS		
		8-13-62	65	537	7.6	48 2.40	32 2.61	15 0.65	2.3 0.06	0	286 4.69	0.0 0.00	41 1.16	2.0 0.03	0.2 0.01	0.1	15	USGS		
		8-9-62	62	221	7.4	11 0.55	5.1 0.42	19 0.83	3.1 0.03	0	26 0.59	6.0 0.12	17 0.46	45 0.73	0.3 0.02	0.2	18	USGS		
Iverson domestic and stock	6N/1E-17D1	8-13-62	66	397	8.5	45 2.25	22 1.85	12 0.52	0.8 0.02	16	230 3.77	2.8 0.06	10 0.28	2.3 0.04	0.3 0.02	0.0	0	USGS		
		8-13-62	63	367	8.6	54 2.69	12 0.95	9.6 0.42	1.1 0.03	14	211 3.46	0.0 0.00	10 0.28	1.1 0.02	0.1 0.01	0.0	0	USGS		
		8-13-62	63	349	8.4	49 2.45	12 0.99	7.3 0.32	1.1 0.03	7	207 3.39	0.0 0.00	12 0.34	0.9 0.01	0.2 0.01	0.0	0	USGS		
		8-13-62	64	745	8.6	14 0.70	11 0.92	128 5.57	7.4 0.19	11	265 4.34	0.0 0.00	101 2.85	4.1 0.07	0.3 0.02	0.4	0	USGS		

a. Determined by addition of constituents.
b. Gravimetric determination.
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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ppm except as shown.

1962

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), U.S. Agriculture Consultants (U.S.A.C.) or State Department of Water Resources (D.W.R.) as indicated. Termol Testing Laboratory (T.T.L.), Copper (Cu), Manganese (Mn), Zinc (Zn), reported here as $\frac{100}{1000}$ except as shown. Iron (Fe), Aluminum (Al), Arsenic (As).

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent total dissolved solids in ppm	Hardness as CaCO ₃		Analyzed by				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm	
J. Tosta	HE&M																							
	3N/2W-2A2	8-22-62	-	2,150	7.7	87 4.35	22 7.60	210 9.13	2.5 0.06	0	80 1.32	37 0.76	656 18.19	2.8 0.05	0.2 0.01	0.1 0.01	0.1	15		1,380	43	598	532	USGS
	3N/2W-13V1	8-21-62	-	3,110	8.2	130 6.49	172 14.18	182 7.92	5.2 0.13	0	156 2.56	52 1.08	870 24.54	3.2 0.05	0.2 0.01	0.0	0.0	42		1,920	28	1,030	902	USGS
	-27G1	8-24-62	-	7,000	8.0	202 11.10	299 24.50	988 42.95	2.5 0.04	0	289 4.73	178 3.69	2459 69.35	2.8 0.05	0.1 0.01	0.3	18		5,360	54	1,780	1,543	USAC	
P. C. Lorenzen	-35M1	8-24-62	-	1,340	8.0	61 3.06	71 5.76	110 4.80	1.6 0.04	0	254 4.17	41 0.87	294 8.27	2.8 0.05	0.1 0.01	0.1	20		690	35	441	232	USAC	
	MD&M																							
W. B. Moxy domestic and irrigation	22N/12W-612	9-17-62	62	375	8.5	40 2.00	14 1.16	21 0.91	0.8 0.02	8 0.27	209 3.42	7.2 0.15	2.9 0.08	2.0 0.03	0.2 0.01	0.17	23	Al 0.01 Pb 0.02 Mn 0.05	229	22	158	0	DWR	
	-19F	9-17-62	60	511	8.5	24 1.20	52 4.27	11 0.48	0.5 0.01	8 0.27	298 4.88	22 0.46	6.3 0.18	5.1 0.08	0.2 0.01	0.15	26	Cu 0.01	299	8	274	16	DWR	
B. Hurt domestic	22N/13W-113	9-17-62	60	252	8.3	14 0.70	14 1.16	18 0.78	0.6 0.02	0	130 2.13	9.7 0.20	8.9 0.25	1.1 0.02	0.2 0.01	0.2	21	Cu 0.01	154	29	93	0	DWR	
	-12K1	9-17-62	60	358	8.4	28 1.40	18 1.52	21 0.91	0.7 0.02	5 0.17	205 3.36	4.9 0.10	6.4 0.18	1.2 0.02	0.4 0.02	0.16	23	As 0.01	209	24	146	0	DWR	
F. F. Rohrbaugh domestic	-13A1	9-17-62	63	247	8.3	26 1.30	10 0.86	9.0 0.39	0.7 0.02	0	145 2.38	1.3 0.03	2.9 0.08	1.2 0.02	0.1 0.00	0.13	20	Al 0.02	156	15	108	0	DWR	
	23N/12W-28N1	9-17-62	64	228	8.2	26 1.30	7.8 0.64	6.2 0.27	1.0 0.02	0	100 1.97	6.1 0.13	1.9 0.05	1.2 0.02	0.1 0.00	0.12	15	Al 0.11	128	12	97	0	DWR	
Crawford Lumber Co. domestic and irrigation																								
	-33L1	9-17-62	-	548	8.6	92 4.59	14 1.16	28 1.22	0.8 0.02	21 0.70	362 5.93	0.0 0.00	2.9 0.08	3.0 0.05	0.3 0.02	0.12	31	As 0.19	371	17	288	0	DWR	
E. Benner domestic and irrigation																								
	23N/13W-25P1	9-17-62	62	236	8.3	31 1.55	7.7 0.63	6.3 0.27	0.9 0.02	0	124 2.03	11 0.23	4.1 0.12	1.5 0.02	0.1 0.00	0.07	13	Al 0.05	141	11	109	17	DWR	
W. V. Clarke domestic and irrigation																								
C. A. Gray irrigation	-36P2	9-17-62	60	245	8.1	25 1.25	11 0.91	7.2 0.31	0.7 0.02	0	126 2.06	7.6 0.16	2.9 0.08	6.4 0.10	0.1 0.00	0.15	17	Al 0.02 Zn 0.03	144	12	108	5	DWR	

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\mu\text{g/g}$ except as shown

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1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million equivalents per million								Total dissolved solids in ppm ^a	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)			Ni-t- rate (NO ₃)	Fluo-ride (F)		Boran (B)	Silica (SiO ₂)	Other constituents ^d
	<u>M D B & M</u>					<u>UKIAH VALLEY (1-15)</u>															
G. C. Gilley domestic	14N/12W-5K1	9-29-62		620	8.0	67 3.34	22 1.84	37 1.61	1.7 0.04	0 0.00	356 5.83	50 1.04	1.2 0.03	0.9 0.01	1.0 0.05	0.9	25		376	24	USGS
L. Johnson domestic	14N/12W-11N1	10-62		294	7.6	18 0.90	20 1.64	8.9 0.39	0.7 0.02	0 0.00	113 1.85	17 0.35	7.8 0.22	36 0.58	0.7 0.04	0.3	18		184	13	USGS
M. Mehtonen domestic	14N/12W-26K1	10-2-62	65	348	8.4	23 1.15	24 2.00	14 0.61	0.2 0.01	6 0.20	181 2.97	14 0.29	14 0.39	4.1 0.07	0.4 0.02	1.0	28		199	16	USGS
City of Ukiah municipal	15N/12W-16E1	10-62	66	287	7.9	28 1.40	13 1.10	12 0.52	1.8 0.05	0 0.00	158 2.59	14 0.29	7.8 0.22	1.3 0.02	0.6 0.03	0.2	16		170	17	USGS
Regina Water Co. municipal	15N/12W-21H1	10-2-62		257	8.4	25 1.25	12 0.99	9.8 0.43	1.0 0.03	3 0.10	147 2.41	8.0 0.17	4.0 0.11	1.0 0.02	0.2 0.01	0.5	16		141	16	USGS
D. R. Broggi domestic and irrigation	15N/12W-35O1	10-62		386	8.3	34 1.70	12 1.02	30 1.30	1.0 0.02	0 0.00	199 3.26	6.4 0.13	20 0.56	0.5 0.01	0.2 0.01	0.15	35		240	32	DWR
F. Brown domestic	16N/12W-5O1	10-62	63	353	8.1	23 1.15	19 1.53	24 1.04	0.6 0.02	0 0.00	185 3.03	0.0 0.00	24 0.68	1.4 0.02	0.9 0.05	0.1	28		202	28	USGS
F. Brown irrigation	16N/12W-5O2	10-62	62	348	7.2	18 0.90	18 1.44	30 1.30	0.3 0.01	0 0.00	200 3.28	0.0 0.00	16 0.45	0.9 0.01	1.0 0.05	0.1	26		200	36	USGS
Mendocino Sub Station domestic	16N/12W-9Q1	10-2-62	61	408	8.3	28 1.40	17 1.38	42 1.83	0.9 0.02	7 0.23	246 4.03	6.0 0.12	7.2 0.20	1.0 0.02	1.0 0.05	0.2	29		250	40	USGS
J. E. Nelson domestic	17N/12W-18A1	10-62	63	1930	7.7	38 1.90	5.1 0.42	338 14.70	0.7 0.02	0 0.00	233 3.82	1.0 0.02	505 14.25	2.1 0.03	1.2 0.06	81	21		1270	86	USGS
H. Mathews domestic	17N/12W-28M1	10-2-62	62	212		17 0.85	9.4 0.77	11 0.48	0.3 0.01	0 0.00	84 1.38	15 0.31	6.8 0.19	17 0.27	0.7 0.04	0.3	31		149	23	USGS
A. DeMarcanantonio domestic	12N/11W-2F1	10-62		408		44 2.20	21 1.76	13 0.56	1.3 0.03	0 0.00	231 3.79	20 0.42	7.6 0.21	1.7 0.03	0.2 0.01	0.34	18		239	12	DWR

a. Determined by addition of constituent.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{600}$ except as shown

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)			Ni-trate (NO ₃)	Fluo-ride (F)		Boron (B)	Silica (SiO ₂)	Other constituents
	M D B & M							SANEL VALLEY		(1-16) (Cont.)											
E. F. Hawn irrigation	13N/11W-701	10-62	62	314	8.1	21 1.05	24 2.01	8.4 0.37	0.5 0.01	0 0.00	188 3.08	11 0.23	5.0 0.14	1.3 0.02	0.6 0.03	0.3	24		179	11	USGS
A. Domiano irrigation	13N/11W-18B1	10-62	62	330	8.2	23 1.15	20 1.67	17 0.74	0.9 0.02	184 3.02	12 0.25	7.4 0.21	9.7 0.16	0.3 0.02	1.5	19		190	21	USGS	
J. H. Pomroy Co. irrigation	13N/11W-1801	10-62	63	194	8.1	17 0.85	10 0.83	7.1 0.31	0.9 0.02	106 1.74	9.0 0.19	4.2 0.12	1.6 0.03	0.7 0.03	0.4	16		115	15	USGS	
Hopland P. U. District municipal	13N/11W-19N1	10-62		261	8.0	14 0.70	15 1.26	17 0.74	0.4 0.01	135 2.21	1.0 0.02	1.4 0.39	6.7 0.11	0.8 0.04	0.0	40		172	27	USGS	
Grace Ranch domestic, irrigation, and stock	13N/11W-30H1	10-62		309	8.1	24 1.20	19 1.58	10 0.44	2.0 0.05	168 2.75	14 0.29	7.5 0.21	2.0 0.03	0.7 0.04	0.3	16		177	13	USGS	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as mg/l except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c						
						equivalente per million										Silica (SiO ₂)								
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ride (NO ₃)				Fluo-ride (F)		Boron (B)	Total ppm	N.C. ppm			
H. Cloakie domestic and stock	M D B & M 3N/6W-1Q1	10-25-62	1270			SAN FRANCISCO BAY REGION (No. 2)												DWR						
						PETALUMA VALLEY (2-1)																		
O. White domestic and irrigation	3N/6W-3C1	4-62	3910	7430		82	230	368	17	0	531	0	165	13	0.5	0.92	17	2520	40	1176	741	DWR		
						4.12	19.40	16.00	0.44	0.00	8.70	0.00	30.10	0.21	0.03									
S. K. Herzog Co. domestic and stock	3N/6W-11B1	4-62	1950	7.8		38	45	336	13	0	569	7	2270	8	0.3	0.54	19	1380	71	290	0	DWR		
						1.90	3.69	14.60	0.34	0.00	9.33	0.15	10.49	0.14	0.02									
C. Strozzi stock	3N/6W-15M1	4-3-62	56	538	7.4	46	19	33	1.9	0	110	61	69	8	0.4	0.02	7	365	27	195	105	DWR		
						2.30	1.60	1.46	0.05	0.00	1.80	1.27	1.96	0.14	0.02									
Rupprecht domestic, stock, and irrigation	3N/6W-18M1	4-3-62	709	7.5		34	48	32	7.2	0	175	63	59	70	0.2	0	9	480	20	283	139	DWR		
						1.70	3.95	1.40	0.02	0.00	2.87	1.33	1.66	1.14	0.01									
K. Johnson domestic	3N/7W-14F1	4-3-62	610	693	7.7	28	34	73	0.9	0	260	29	81	0	0.8	0.68	14	495	43	210	0	DWR		
						1.38	2.82	3.18	0.02	0.00	4.27	0.61	2.28	0.00	0.04									
Lopes domestic	4N/6W-7H1	4-62	1081	8.2		38	72	104	1	0	549	44	74	28	0.2	2.00	17	835	36	390	0	DWR		
						1.90	5.90	4.50	0.03	0.00	9.00	0.92	2.08	0.45	0.01									
		10-26-62	984										50								DWR			

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{0.00}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)			Ni-trate (NO ₃)	Fluo-ride (F)		Boron (B)
	<u>M O B & M</u>							PETALUMA VALLEY (2-1) (Cont.)											
Lopes irrigation and stock	4N/6W-7H2	10-26-62		4480								1120 31.58							DWR
L. A. Bourke domestic and stock	4N/6W-21Q1	4-62		940	7.8	14 0.71	8 0.66	200 8.70	3 0.08	0 0.00	397 6.52	29 0.61	110 3.10	0 0.00	0.2 0.02	0.89	35	0	DWR
		10-29-62		1060									152 4.29					DWR	
O. White irrigation and stock	4N/6W-33R1	4-62		4070	7.6	164 8.20	202 16.64	382 16.60	19 0.50	0 0.00	561 9.20	0 0.00	1124 31.65	10 0.17	0 0.00	0.42	28	1242 782	DWR
		10-29-62		5560									1720 48.50					DWR	
Union Oil Company industrial	4N/7W-2D1	4-62		26800	7.4	285 14.20	2160 177.70	2640 115.00	39 1.00	0 0.00	112 1.83	1140 23.83	10400 293.57	0 0.00	0 0.00	0.60	29	9600 9510	DWR
		10-26-62		23800									9700 273.54					DWR	
F. Riebli domestic and stock	5N/6W-3001	4-62		1300	8.2	80 3.98	56 4.62	118 5.15	2 0.06	0 0.00	441 7.23	138 2.88	137 3.86	0 0.00	0.2 0.01	0.54	24	430 68	DWR
		10-26-62		932									105 2.96					DWR	
N. J. Matzen domestic	5N/7W-803	4-62		1100	8.3	68 3.38	28 2.32	87 3.80	4 0.10	0 0.00	252 4.15	38 0.81	177 4.97	0 0.00	0 0.00	0	21	285 78	DWR
		10-26-62		935									161 4.54					DWR	
Oberg Lumber Co. domestic	5N/7W-19A1	4-62		611	7.9	34 1.72	9 0.73	79 3.45	2 0.06	0 0.00	225 3.68	27 0.56	54 1.50	0 0.00	0.2 0.01	0.58	13	123 0	DWR
		10-29-62		549									45 1.27					DWR	
Al's Barber Shop domestic	5N/7W-20L3	4-62		1990	8.0	90 4.52	63 5.20	207 9.00	4 0.10	0 0.00	169 2.76	38 0.80	484 13.66	75 1.22	0 0.00	0.02	25	486 348	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ^{ppm}/₁₀₀ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c						
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)			Ni-tro-rite (NO ₃)	Fluo-ride (F)		Boron (B)	Silica (SiO ₂)	Other constituents ^d	Total ppm	N.C. ppm	
	M O B & N					PETALUMA VALLEY (2-1) (Cont'd.)																		
Al's Barber Shop domestic	5N/7W-20L3	10-29-62	1910										441 12.44										DMR	
	5N/7W-26E1	10-26-62	585	8.0		41 2.05	17 1.43	64 2.78	2.0 0.05	0 0.00	282 4.62	21 0.44	46 1.30	1.3 0.02	0.5 0.03	0.0	24			353	44	0	DMR	
	5N/7W-34E2	4-62	880	8.6		5 0.23	3 0.27	205 8.90	1 0.02	41 1.36	313 5.14	21 0.45	80 2.24	0 0.00	0.5 0.02	0.38	13			640	94	0	DMR	
		10-26-62	848										69 1.94										DMR	
R. H. Surtori irrigation	5N/7W-35K1	10-26-62	580	8.3		46 2.30	24 1.98	36 1.57	2.7 0.07	5 0.17	224 3.67	17 0.35	46 1.30	17 0.27	0.4 0.02	0.0	67			391	27	22	DMR	
E. P. Nunn domestic	3N/3W-18G1	4-3-62	1020	7.5		55 2.77	49 4.00	91 3.95	2 0.04	0 0.00	386 6.33	31 0.65	132 3.72	4 0.07	0.3 0.02	0.52	22		ABS 0.0	735	37	22	DMR	
		9-19-62	1160				96 4.18						138 3.89	28 0.45		0.24							DMR	
	3N/3W-18G2	4-3-62	1390										174 4.91	152 2.45				ABS 0.0					DMR	
O. L. Pickens domestic		9-19-62	1500					118 5.13					177 4.99	169 2.72		0.19							DMR	
		4-4-62	788	7.65		72 3.59	17 1.36	72 3.15	1 0.02	0 0.00	145 2.38	106 2.21	112 3.14	6 0.10	0.57 0.03	0.12	32			540	39	248	129	DMR
		9-19-62	782					59 2.57					98 2.76			0.20								DMR
Napa County Airport domestic	4N/4W-2L1	4-4-62	289	7.4		9 0.43	6 0.45	46 2.00	1 0.03	0 0.00	90 1.48	1 0.03	39 1.08	14 0.24	0.4 0.02	0	31			205	69	0	DMR	
N. Rhodes domestic	4N/4W-5C1	4-4-62	290					42 1.83					32 0.90			0.14								DMR
		9-19-62																						

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown.

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million equivalents per million								Total dissolved solids in ppm _b	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)			Fluo-ride (F)	Boron (B)	
Press Wireless domestic	M D B & N																	
	4N/4W-7A1	4-4-62	520	7.6		13 0.63	13 1.13	79 3.45	0.6 0.02	0 0.00	138 2.26	4 0.08	93 2.63	0 0.00	0.6 0.03	0	11	88 0 DMR
		9-19-62	512					70 3.04						97 2.74	0.12			DMR
P. Rogers domestic and stock	4N/4W-12N1	9-19-62	875				77 3.35						101 2.85	0.12				DMR
Jacobs stock	4N/4W-13E1	4-4-62	1840	7.2		147 7.36	36 3.04	200 8.70	3.1 0.08	0 0.00	360 5.90	211 4.40	304 8.58	15 0.25	0.6 0.03	0.24	23	1280 45 520 225 DMR
		9-19-62	2040				206 8.96						362 10.21	0.27				DMR
V. Bassham domestic	4N/4W-14C2	9-19-62	1560				143 6.22						322 9.08	0.22				DMR
H. Mini stock	4N/4W-25K1	4-4-62	1180	7.9		49 2.44	64 5.31	86 3.75	0.7 0.02	0 0.00	485 7.95	72 1.51	53 1.51	5 0.08	0.6 0.03	0.70	5	720 33 388 0 DMR
U. S. Navy municipal	4N/5W-14D2	4-62	965	8.3		12 0.60	10 0.76	191 8.30	3 0.08	0 0.00	308 5.06	44 0.93	125 3.52	1 0.02	0.5 0.03	0.48	56	665 85 68 0 DMR
		10-25-62	947										123 3.47	0.19				DMR
Sonoma Ranch stock	4N/5W-32B1	4-62	2940	7.8		80 3.90	62 5.14	504 21.90	10 0.27	0 0.00	647 10.60	0 0.00	703 19.82	8 0.13	0 0.00	2.5	44	2040 70 452 0 DMR
		10-25-62	3630										930 26.23	2.4				DMR
Sonoma Ranch stock	4N/5W-34D1	4-62	2910	8.4		55 2.76	63 5.24	469 20.40	16 0.40	102 3.40	287 4.70	0 0.00	730 20.56	1 0.01	0.25 0.01	1.46	43	1880 71 400 95 DMR
		10-25-62	2900										671 18.92	2.2				DMR
M. L. George domestic	5N/4W-9Q2	4-4-62	451	7.8		24 1.22	13 1.08	61 2.64	1 0.02	0 0.00	235 3.85	0 0.00	41 1.15	0 0.00	0.4 0.02	0.15	23	345 53 115 41 DMR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ^{as}/_{as} except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Barium (Ba)	Silica (SiO ₂)	Other constituents	
	M D B & M																	
M. L. George domestic	5N/4W-902	9-18-62	65	488		9 0.72	.8 0.65	59 2.57	7 0.18	0 0.00	0 0.00	45 1.27	0 0.00	0.7 0.04	0.19	38		DWR
W. Gellenger domestic	5N/4W-11F3	4-4-62		687	8.0	9 0.72	.8 0.65	132 5.75	7 0.18	0 0.00	0 0.00	98 2.75	0 0.00	0.7 0.04	1.5	69	0	DWR
		9-18-62		680				113 4.92				92 2.59			2.2			DWR
P. A. Gasser domestic and stock	5N/4W-14C1	4-4-62		277	7.1	16 0.78	13 1.08	23 0.99	2 0.06	0 0.00	11 0.22	29 0.82	1 0.01	0.3 0.01	0	46	0	DWR
		9-18-62		230				17 0.74				17 0.48			0.13			DWR
John Healy domestic	5N/4W-15E1	4-4-62		404	8.0	20 0.98	12 1.01	55 2.37	2 0.06	0 0.00	8 0.17	42 1.17	0 0.00	0.5 0.03	0.02	38		DWR
		9-18-62		451				51 2.22				49 1.38			0.16			DWR
A. L. Poe domestic	5N/4W-21P2	4-4-62		2200	8.0	32 1.60	13 1.13	460 20.00	8 0.02	0 0.00	140 2.92	468 13.16	1 0.01	0.4 0.02	0	20		DWR
		9-19-62		2340				448 19.49				476 13.42			0.49			DWR
Stewart's Dairy stock	5N/4W-22M1	9-19-62	72	674				94 4.09				58 1.64			0.72			DWR
Napa State Hospital irrigation	5N/4W-23C2	9-19-62		245	8.2	15 0.74	16 1.26	10 0.43	1.6 0.04	0 0.00	9.1 0.19	7.7 0.22	0 0.00	0.1 0.01	0.1	17		DWR
J. Firminghar domestic	5N/5W-18D2	4-62		509	8.1	28 1.40	21 1.72	48 2.10	2 0.06	0 0.00	21 0.46	38 1.06	43 0.69	0.5 0.03	0.33	56		DWR
		10-24-62		516								35 0.99	51 0.82		0.15			DWR
L. Miglioretti domestic and irrigation	5N/5W-20R1	4-62		935	8.3	15 0.76	5 0.40	205 8.90	4 0.09	0 0.00	9 0.19	84 2.35	1 0.01	0 0.00	3.7	18	0	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{1000}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million equivalents per million								Total dissolved solids in ppm ^b	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)			Nitrate (NO ₃)	Fluoride (F)		Boron (B)	Silica (SiO ₂)
E. L. Smith domestic and stock	M D B & M																			
	5N/6W-12F1	4-62		399	8.2	17 0.85	13 1.07	54 2.36	2 0.04	0 0.00	200 3.28	7 0.15	25 0.70	0 0.01	0.3 0.02	0.42	40	96	0	DWR
M. Kiser irrigation	5N/6W-24K1	4-62		450																DWR
		10-24-62																		DWR
T. E. Connely domestic	5N/6W-25F1	10-26-62		505	7.6	45 2.25	33 2.65	27 1.18	2 0.05	0 0.00	343 5.62	6 0.13	21 0.59	0 0.00	0 0.00	0.15	46	245	0	DWR
	6N/4W-15Q1	4-4-62		311	7.6	23 1.17	7 0.56	28 1.22	4 0.09	0 0.00	92 1.50	19 0.41	22 0.62	35 0.57	0.28 0.01	0	34	87	12	DWR
N. Tarvio domestic and irrigation	6N/6W-23M2	4-62		264																DWR
		9-18-62																		DWR
A. Fagiani domestic	7N/4W-30L1	9-18-62		492	7.8	17 0.87	2 0.17	70 3.05	15 0.38	0 0.00	146 2.40	1 0.02	76 2.14	0 0.00	0.6 0.03	0.94	56	52	0	DWR
	7N/5W-5A6	4-4-62		449																DWR
Wheeler domestic and stock	9N/6W-31Q1	9-18-62		522																DWR
		4-4-62		499	8.0	44 2.21	25 2.07	18 0.81	4 0.09	0 0.00	209 3.43	33 0.68	38 1.06	13 0.22	0.2 0.01	0.38	20	214	42	DWR
J. Alcouffe domestic and stock	9N/6W-31Q1	4-4-62		128	7.0	14 0.70	1 0.08	9 0.40	1 0.02	0 0.00	40 0.65	13 0.26	8 0.23	8 0.14	0.10 0.00	0	30	39	6	DWR
		9-18-62		152																DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ^{as} except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)			Fluo-ride (F)	Boron (B)		Silica (SiO ₂)	Other constituents	Total ppm	N.C. ppm
R. H. Archerd domestic	M D B & M 9N/7W-25N1	4-4-62		778	8.2	16 0.81	1 0.13	150 6.50	10 0.25	0 0.00	178 2.92	1 0.03	160 4.51	0 0.00	3.17 0.17	8	47	530	85	47	0	DWR
								165 7.18								12						
	3N/1E-4B1	5-17-62		1310	8.4	51 2.56	67 5.45	129 5.60	4 0.09	54 1.80	241 3.95	18 0.38	233 6.55	31 0.49	0.6 0.03	0.96	25	875	41	401	113	DWR
Taylor domestic	3N/1E-21D1	5-17-62		1800	8.45	6 0.30	6 0.54	432 18.80	3 0.08	98 3.28	530 8.68	101 2.11	181 5.10	1 0.02	0.5 0.03	6.68	22	1320	95	21	0	DWR
	3N/1E-22F2	5-17-62		1820	8.0	34 1.70	29 2.40	354 15.40	2 0.06	0 0.00	544 8.92	77 1.61	289 8.14	12 0.19	0.6 0.03	3.88	20	1300	79	205	0	DWR
McDougal Livestock Co. domestic	3N/1E-22F3	5-17-62		1890	8.2	40 2.00	31 2.56	350 15.20	5 0.12	0 0.00	523 8.58	80 1.66	301 8.48	28 0.45	0.7 0.04	3.36	20	1340	76	114	0	DWR
	4N/1E-8F1	5-17-62		2600	7.8	105 5.26	85 6.98	288 12.50	14 0.35	0 0.00	231 3.78	68 1.42	694 19.54	7 0.12	0.3 0.01	0.92	65	1660	50	612	423	DWR
Fish & Game Comm. domestic	4N/1W-33A1	5-17-62		3600	8.1	56 2.80	55 4.52	713 31.00	8 0.20	0 0.00	624 10.24	162 3.39	864 24.33	1 0.02	0.4 0.02	14	22	2500	80	366	0	DWR
			9-25-62		3630				334 14.53					825 23.26								DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ^{ppm} except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)			Fluoride (F)	Boron (B)		Silica (SiO ₂)	Other constituents ^d	Total ppm	N.C. ppm
Southern Pacific Railroad industrial	4N/2W-5Q2	5-17-62		399	8.0	21 1.07	7 0.63	49 2.16	3 0.08	0 0.00	6 0.13	46 1.27	0 0.00	0.2 0.01	0	62		290	55	85	0	DMR
		9-25-62		378				43 1.87					42 1.18									DMR
F. P. Smith domestic	4N/2W-18M1	5-17-62		1120	8.0	89 4.44	36 2.99	100 4.35	1 0.02	0 0.00	138 2.88	106 2.98	8 0.14	0.4 0.02	1.32	22		810	37	372	61	DMR
		9-25-62		1120				89 3.87					114 3.21									DMR
D. R. Mangels irrigation	4N/3W-13G2	5-17-62		1020	7.5	95 4.74	34 2.75	105 4.55	2 0.06	0 0.00	128 2.66	79 2.22	3 0.05	0.5 0.03	0.50	20		835	38	375	18	DMR
		9-25-62		1070				103 4.48					79 2.23									DMR
H. J. Beck domestic	5N/2W-27J4	5-17-62		872	8.4	76 3.78	35 2.92	78 3.40	1 0.02	36 1.21	47 0.98	50 1.41	16 0.27	1.4 0.08	1.06	22		665	34	335	0	DMR
		9-25-62		772				71 3.09					50 1.41									DMR
domestic	5N/2W-34N1	5-17-62		2010	7.7	96 4.78	91 7.47	248 10.80	1 0.02	0 0.00	293 6.10	183 5.14	19 0.30	0.5 0.02	2.14	16		1520	46	613	36	DMR
		9-25-62		1860				236 10.27					184 5.19									DMR
domestic	5N/2W-34P4	5-17-62		1740	7.8	61 3.06	83 6.82	244 10.60	2 0.04	0 0.00	127 2.64	118 3.32	22 0.35	0.6 0.03	2.57	21		1360	52	494	0	DMR
		9-25-62		1500				202 8.79					58 1.64									DMR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{mg}}{\text{L}}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c							
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents		Total ppm	N.C. ppm					
Continental Can Co. Irr.	2N/1E-7R2	6-8-62		3220	8.0	173	108	351	12	0.0	662	541	0.9	0.5	0.56	52		46	875	613	DWR						
						8.63	8.85	15.27	0.31	0.00	13.78	15.26	0.01	0.03													
Dow Chemical Co. Dom.	-22CL	6-8-62	68	1450	8.4	83	48	163	6.4	5	364	100	1.7	0.4	0.56	45		46	404	140	DWR						
						4.14	3.93	7.09	0.16	0.17	7.58	2.82	0.03	0.02													
Fibreboard Prod. Inc. Dom.	2N/2E-20A1	6-8-62	69	1830	8.2	85	68	195	4.4	0.0	200	302	23	0.3	0.67	56		46	492	205	DWR						
						4.24	5.59	8.48	0.11	0.00	4.16	8.52	0.37	0.02													
G. Curletto Irrigation and domestic	1N/1W-4A1	7-11-62		658	7.5	51	40	28	0.8	0	64	27	12	0.1	0.17	29		17	294	59	DWR						
						2.54	3.33	1.22	0.02	0.00	4.70	0.76	0.19	0.00													
S. W. Cowell Foundation	1N/1W-4R1	7-11-62	65	1130	7.7	62	52	81	0.7	0	53	173	28	0.2	0.36	36		32	387	154	DWR						
						3.44	4.29	3.61	0.02	0.00	4.65	4.88	0.45	0.02													
F. Baker domestic	2N/1W-30J1	7-10-62		1120	7.5	93	65	62	0.7	0	124	54	21	0.2	0.33	24		21	501	93	DWR						
						4.64	5.37	2.70	0.02	0.00	8.16	1.52	0.34	0.01													
J. Diebrow domestic	2N/1W-30K1	7-10-62		424	8.0	29	12	35	2.1	0	44	45	0.6	0.2	0.17	6.7		38	124	34	DWR						
						1.45	1.03	1.52	0.05	0.00	0.92	1.27	0.01	0.01													
F. Dorville domestic	2N/1W-31D1	7-10-62		898	8.3	84	46	74	0.7	0	72	88	48	0.2	0.26	31		16	400	171	DWR						
						4.19	3.80	1.48	0.08	0.00	4.57	2.48	0.77	0.01													
R. B. Ogilvie domestic	2N/2W-13P1	7-10-62		777	8.2	31	25	91	1.1	0	48	97	6.8	0.4	0.31	33		52	181	0	DWR						
						1.55	2.07	3.96	0.03	0.00	3.77	2.74	0.11	0.02													
Bertinola domestic	2N/2W-26B1	7-10-62		414	8.0	26	13	35	2.1	0	46	47	0.7	0.1	0.13	14		39	117	34	DWR						
						1.30	1.04	1.52	0.05	0.00	0.96	1.32	0.01	0.00													
J. D. Mallen domestic	2N/2W-36J1	7-11-62		1080	8.1	63	41	108	0.7	0	96	121	36	0.3	0.37	32		42	327	68	DWR						
						3.14	3.39	4.70	0.02	0.00	5.18	3.41	0.58	0.02													

a. Determined by addition of constituents.

b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)			Boron (B)	Silica (SiO ₂)		Total ppm
A. Sebastiani domestic	1N/1W-7K1	7-11-62		2140	8.0	111 5.54	70 5.75	266 11.57	1.6 0.04	0 0.00	442 7.24	491 10.22	203 5.72	15 0.24	0.5 0.03	1.2	24	51	565	203	DWR
	1N/1W-29G1	7-11-62		2080	7.9	127 6.34	74 6.05	224 9.74	1.1 0.03	0 0.00	504 8.26	235 4.89	316 8.91	18 0.29	0.9 0.05	1.1	20	44	620	207	DWR
	1N/2W-11N1	7-11-62		984	8.2	37 1.85	31 2.55	129 5.61	2.6 0.07	0 0.00	364 5.96	23 0.48	126 3.55	0.2 0.00	0.3 0.02	1.6	41	56	220	0	DWR
J. Wells domestic	1N/2W-13P1	7-11-62		1560	7.7	107 5.34	77 6.37	129 5.61	0.7 0.02	0 0.00	594 9.74	119 2.48	151 4.26	41 0.66	0.5 0.03	1.8	30	32	586	99	DWR
F. H. Durham domestic	2N/2W-27R1	7-10-62		1780	8.3	29 1.45	38 3.15	301 13.09	3.8 0.10	0 0.00	488 8.00	67 1.39	301 8.49	0.7 0.01	0.2 0.01	6.3	43	74	230	0	DWR
A. Buscaglia domestic	2N/2W-36E1	7-10-62		3220	7.9	236 11.78	156 12.80	250 10.88	0.9 0.02	0 0.00	574 9.41	414 8.62	534 15.06	136 2.19	0.5 0.13	1.9	36	31	1230	759	DWR
domestic	2N/2W-36E2	7-10-62		1650	7.9	119 5.94	93 7.67	106 4.61	1.4 0.04	0 0.00	614 10.06	36 0.75	241 6.80	1.9 0.03	0.2 0.01	0.5	25	25	681	178	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{100}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm _a	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm	
						SANTA CLARA VALLEY - EAST BAY AREA (2-9)																		
Manass Block Tanning Company Industrial	1S/1W-4A1	6-7-62	66	1370	8.0	78 3.89	68 5.56	100 4.35	1.1 0.03	0 0.00	260 4.26	110 2.29	234 6.60	22 0.35	0.2 0.01	0.17 0.01	32			773	31	473	260	DWR
	1S/4W-34F2	6-7-62	67	938	8.2	30 1.50	24 1.98	132 5.74	1.7 0.04	0 0.00	260 4.26	25 0.52	152 4.29	7.0 0.11	0.2 0.01	0.22 0.01	39	ABS 0.0		539	62	174	0	DWR
General Metals Industrial	2S/3W-21J1	6-7-62	68	5300	7.8	465 23.20	211 17.36	282 12.27	5.5 0.14	0 0.00	101 1.66	142 2.96	1670 47.09	9.0 0.14	0.1 0.00	0.38 0.00	34			2870	23	2030	1950	DWR
A. Ratto Irrigation	2S/3W-28C1	6-7-62	66	681	8.2	36 1.80	18 1.46	81 3.52	23 0.06	0 0.00	231 3.79	47 0.98	71 2.00	0.0 0.00	0.2 0.01	0.40 0.01	35			405	51	163	0	DWR
Alameda Municipal Golf Course Irrigation	2S/3W-30A	6-8-62		1110	7.9	60 2.99	31 2.52	113 4.92	2.9 0.07	0 0.00	138 2.26	36 0.75	253 7.13	0.8 0.01	0.1 0.00	0.4 0.00	34	ABS 0.0		599	47	276	163	DWR
	2S/3W-30D2	6-7-62		3890	7.6	316 15.77	136 11.20	242 10.53	6.9 0.18	0 0.00	56 0.92	123 2.56	1170 32.99	0.0 0.00	0.1 0.00	0.34 0.00	35			2060	28	1350	1300	DWR
Hohener Packing Co. domestic and industrial	2S/3W-33H3	6-19-62		610	8.5	33 1.65	17 1.43	75 3.26	3.3 0.08	9 0.30	299 4.99	33 0.69	25 0.70	2.0 0.03	0.2 0.01	0.49 0.01	34	ABS 0.0		379	51	154	0	DWR
	2S/3W-34A2	6-19-62		833	8.4	76 3.79	44 3.64	45 1.96	0.6 0.02	6 0.20	317 5.20	66 1.37	46 1.30	55 0.89	0.3 0.02	0.40 0.02	27	ABS 0.0		522	21	372	102	DWR
J. A. Jacklich domestic	2S/3W-34O3	6-20-62	68	586	8.4	42 2.10	19 1.58	60 2.61	1.5 0.04	6 0.20	298 4.88	27 0.56	26 0.73	1.4 0.02	0.3 0.02	0.44 0.02	22	ABS 0.0		352	41	184	0	DWR
Alameda Naval Air Sta. municipal	2S/4W-3E1	6-7-62		864	8.3	35 1.75	17 1.37	130 5.66	2.1 0.05	0 0.00	294 4.82	41 0.85	110 3.10	0.9 0.01	0.1 0.00	0.45 0.00	36	ABS 0.0		516	64	156	0	DWR
Todd Shipyards Industrial	2S/4W-3F1	6-7-62	68	809	7.7	35 1.75	20 1.69	103 4.48	1.7 0.04	0 0.00	250 4.10	23 0.48	119 3.36	0.6 0.01	0.1 0.00	0.32 0.00	37	ABS 0.0		463	56	172	0	DWR
Alameda High School domestic and irrigation	2S/4W-12R1	6-7-62	68	388	7.8	23 1.15	11 0.89	40 1.74	1.9 0.05	0 0.00	157 2.57	6.6 0.14	23 1.07	0.2 0.00	0.3 0.02	0.15 0.02	26			224	45	102	0	DWR

Determined by addition of constituents.

a. Gravimetric determination.

b. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

c. Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{mg}{l}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^a	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c					
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)			Nitrate (NO ₃)	Fluoride (F)		Boron (B)	Silica (SiO ₂)	Other constituents	Total ppm	N.C. ppm
						EAST BAY AREA OF SANTA CLARA VALLEY (Cont.)																	
Ratto	2S/4W-25A1	6-7-62		821	8.4	$\frac{46}{2.30}$	$\frac{13}{1.04}$	$\frac{116}{5.05}$	$\frac{2.3}{0.06}$	$\frac{6}{0.20}$	$\frac{292}{4.78}$	$\frac{48}{1.00}$	$\frac{92}{2.59}$	$\frac{0.2}{0.00}$	$\frac{0.2}{0.01}$	$\frac{0.42}{37}$	$\frac{ABS}{0.0}$	505	60	167	0	DWR	
Bayside Nursery irrigation	3S/2W-7J1	6-19-62	65	847	8.1	$\frac{39}{1.93}$	$\frac{39}{3.20}$	$\frac{75}{3.26}$	$\frac{2.6}{0.07}$	$\frac{0}{0.00}$	$\frac{178}{2.92}$	$\frac{95}{1.98}$	$\frac{90}{2.54}$	$\frac{0.1}{0.00}$	$\frac{0.1}{0.00}$	$\frac{0.52}{43}$	$\frac{ABS}{0.0}$	535	38	258	112	DWR	
Kruger and Sons industrial	3S/2W-19R4	6-19-62		1220	7.7	$\frac{127}{6.34}$	$\frac{37}{3.01}$	$\frac{76}{3.31}$	$\frac{1.3}{0.03}$	$\frac{0}{0.00}$	$\frac{358}{5.87}$	$\frac{91}{1.89}$	$\frac{156}{4.40}$	$\frac{0.3}{0.02}$	$\frac{0.3}{0.02}$	$\frac{0.32}{31}$	$\frac{ABS}{0.0}$	738	26	468	174	DWR	
A. Mateas irrigation	3S/2W-30R14	6-20-62		1280	7.7	$\frac{136}{6.79}$	$\frac{41}{3.40}$	$\frac{83}{3.61}$	$\frac{0.7}{0.02}$	$\frac{0}{0.00}$	$\frac{478}{7.83}$	$\frac{82}{1.71}$	$\frac{123}{3.47}$	$\frac{0.4}{0.02}$	$\frac{0.4}{0.02}$	$\frac{0.40}{29}$	$\frac{ABS}{0.0}$	782	26	510	118	DWR	
M. T. Sladek	3S/2W-31K1	6-28-62	70	610	8.3	$\frac{28}{1.40}$	$\frac{10}{0.86}$	$\frac{91}{3.96}$	$\frac{2.2}{0.06}$	$\frac{0}{0.00}$	$\frac{237}{3.88}$	$\frac{43}{0.90}$	$\frac{51}{1.44}$	$\frac{0.5}{0.01}$	$\frac{0.2}{0.01}$	$\frac{0.37}{26}$	$\frac{ABS}{0.0}$	368	63	113	0	DWR	
Mt. Eden Nursery domestic and irrigation	3S/2W-3203	6-20-62	74	772	8.2	$\frac{28}{1.40}$	$\frac{8.8}{0.72}$	$\frac{124}{5.39}$	$\frac{2.1}{0.05}$	$\frac{0}{0.00}$	$\frac{260}{4.26}$	$\frac{52}{1.08}$	$\frac{82}{2.31}$	$\frac{1.0}{0.02}$	$\frac{0.2}{0.01}$	$\frac{0.51}{31}$	$\frac{ABS}{0.0}$	458	71	106	0	DWR	
Avansino Mortensen Co. irrigation	3S/3W-1C3	6-19-62	76	991	8.2	$\frac{35}{1.75}$	$\frac{22}{1.79}$	$\frac{150}{6.52}$	$\frac{1.7}{0.04}$	$\frac{0}{0.00}$	$\frac{326}{5.34}$	$\frac{57}{1.19}$	$\frac{124}{3.50}$	$\frac{1.9}{0.03}$	$\frac{0.3}{0.02}$	$\frac{0.76}{35}$	$\frac{ABS}{0.0}$	588	64	177	0	DWR	
Trojan Powder industrial	3S/3W-11Q1	6-19-62		1330	8.0	$\frac{52}{2.59}$	$\frac{25}{2.09}$	$\frac{182}{7.95}$	$\frac{3.3}{0.08}$	$\frac{0}{0.00}$	$\frac{147}{2.41}$	$\frac{68}{1.42}$	$\frac{310}{8.74}$	$\frac{1.0}{0.02}$	$\frac{0.3}{0.02}$	$\frac{0.50}{31}$	$\frac{ABS}{0.0}$	775	62	234	114	DWR	
Cianelli irrigation	3S/3W-13B2	6-19-62		1820	7.9	$\frac{117}{5.84}$	$\frac{76}{6.23}$	$\frac{194}{8.44}$	$\frac{1.1}{0.03}$	$\frac{0}{0.00}$	$\frac{607}{9.95}$	$\frac{196}{4.08}$	$\frac{181}{5.10}$	$\frac{77}{1.24}$	$\frac{0.6}{0.03}$	$\frac{1.2}{25}$	$\frac{ABS}{0.0}$	1170	41	604	106	DWR	
J. Harat domestic and stock	3S/3W-24Q2	6-20-62		2070	7.5	$\frac{147}{7.34}$	$\frac{83}{6.80}$	$\frac{178}{7.74}$	$\frac{0.5}{0.01}$	$\frac{0}{0.00}$	$\frac{458}{7.51}$	$\frac{99}{2.06}$	$\frac{370}{10.43}$	$\frac{101}{1.63}$	$\frac{0.5}{0.03}$	$\frac{0.42}{30}$	$\frac{ABS}{0.0}$	1230	35	708	332	DWR	
M. Freitas irrigation	4S/1W-17E4	5-7-62		926				$\frac{59}{2.57}$					$\frac{115}{3.24}$					671 ^b	23	470	201	DWR	
J. M. Enos	4S/1W-18D1	5-8-62		797	8.2	$\frac{115}{5.74}$	$\frac{44}{3.65}$	$\frac{64}{2.78}$	$\frac{2.3}{0.06}$	$\frac{0}{0.00}$	$\frac{328}{5.38}$	$\frac{107}{2.23}$	$\frac{150}{4.23}$	$\frac{23}{0.37}$	$\frac{0.2}{0.01}$	$\frac{0.46}{20}$	$\frac{ABS}{0.0}$	434 ^b	31	254	97	USGS	
		9-62		709	8.2	$\frac{35}{1.75}$	$\frac{40}{3.33}$	$\frac{53}{2.31}$	$\frac{1.7}{0.04}$	$\frac{0}{0.00}$	$\frac{191}{3.13}$	$\frac{68}{1.42}$	$\frac{76}{2.14}$	$\frac{27}{0.44}$	$\frac{0.1}{0.01}$	$\frac{0.2}{21}$							

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{mg}{gal}$ except as shown.

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c					
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)			Fluo-ride (F)	Boron (B)		Silica (SiO ₂)	Other constituents	Total ppm	N.C. ppm	
M. Rose domestic and irrigation	4S/1W-18M7	5-8-62		4840				116 5.05											DWR				
		9-62		3980	7.5	374 18.66	184 15.14	108 4.70	4.1 0.10	51 0.84	23 0.48	1280 36.11	9.3 0.15	0.3 0.02	0.3 0.02	0.3 0.02	17	2500	12	1690	1650	322	USGS
Santa Cruz-Portland Cement Co.	4S/1W-20D2	9-62		1290	8.5	135 6.74	50 4.13	46 2.00	2.4 0.06	8 0.27	66 1.37	246 6.94	12 0.19	0.1 0.00	0.1 0.00	0.44 0.00	17	695	15	544		47	DWR
Citizens Utilities Co. of California municipal	4S/1W-21F2	3-15-62	58	757	8.3	55 2.74	38 3.09	48 2.09	2.2 0.06	0 0.00	88 1.83	43 1.21	6.6 0.11	0.3 0.02	0.3 0.02	0.78 0.00	14	388	26	292		47	DWR
		6-14-62	60	694	7.8	62 3.09	26 2.18	44 1.91	2.0 0.05	0 0.00	93 1.94	46 1.30	4.8 0.08	0.3 0.02	0.3 0.02	0.67 0.00	14	411	26	264		69	DWR
		9-6-62		688	7.7	57 2.84	27 2.19	43 1.87	2.1 0.05	0 0.00	67 1.39	62 1.75	2.6 0.04	0.3 0.02	0.3 0.02	0.69 0.00	13	431	27	252		63	DWR
		12-5-62	63	646	7.9	52 2.59	22 1.85	44 1.91	2.3 0.06	0 0.00	49 1.02	72 2.03	2.4 0.04	0.3 0.02	0.3 0.02	0.63 0.00	15	371	30	222		56	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as mg/l except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per cent sodium	Hardness as CaCO ₃		Analyzed by c					
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Bicar- bonate (CO ₃)	Sul- fide (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)			Fluo- ride (F)	Boron (B)		Silico (SiO ₂)	Other constituents ^d	Total ppm	N.C. ppm	
H. J. Kaiser industrial	4S/1W-21M1	3-15-62	53	682	8.2	51 2.54	34 2.81	44 1.91	1.9 0.05	0 0.00	255 4.18	79 1.64	48 1.35	1.9 0.03	0.2 0.01	0.54	15	Cr+6 0.00 Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.73 T.O. 0 Se 0.00 Cr 0.00 (Total) Fe 0.00 (Total)	406	26	268	59	DWR
						63 3.14	28 2.27	42 1.83	1.7 0.04	0 0.00	252 4.13	84 1.75	46 1.30	2.3 0.04	0.2 0.01	0.77	17	Cr+6 0.00 Al 0.00 As 0.0 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.00 T.O. 1.08 Se 0.00 Cr 0.00 (Total) Fe 0.00 (Total) Phenols 0.000	418	25	271	64	DWR
						61 3.04	28 2.33	42 1.83	1.9 0.05	0 0.00	254 4.16	85 1.77	48 1.35	1.7 0.03	0.2 0.01	0.60	16	Cr+6 0.00 Al 0.10 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.00 T.O. 50 Se 0.00 Cr 0.00 (Total) Fe 0.02 (Total) Phenols 0.000	431	25	269	61	DWR
						64 3.19	28 2.32	44 1.91	2.1 0.05	0 0.00	266 4.36	85 1.77	49 1.38	1.7 0.03	0.3 0.02	0.62	18	Cr+6 0.00 Al 0.00 As 0.00 Cu 0.00 Pb 0.00 Mn 0.00 Zn 0.09 T.O. 1 Se 0.00 Cr 0.00 (Total) Fe 0.02 (Total)	421	26	276	58	DWR
						81 3.52							38 1.07										
M. Desales irrigation and domestic	4S/1W-21R2	5-8-62		766				81 3.52															DWR
		9-62		491	8.3	30 1.50	20 1.66	66 2.87	1.5 0.04	4 0.13	206 3.38	69 1.44	38 1.07	5.7 0.09	0.4 0.02	0.8	20	ABS 0.0	349	47	158	0	DWR
T. Garcia irrigation and domestic	4S/1W-21R6	5-8-62		727				81 3.52					38 1.07										DWR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{80}{100}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^b	Per cent sodium	Hardness as CaCO ₃		Analyzed by c					
						equivalents per million												Other constituents ^d	Total ppm		N.C. ppm				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)							Boron (B)	Silica (SiO ₂)		
A. J. Rezendes irrigation	4S/1W-22M2	5-8-62		1650	8.7	EAST BAY AREA OF SANTA CLARA VALLEY (2-9) (Cont.)														DWR					
								364 15.83					79 2.23												
						22 1.10	12 0.96	375 16.31	8.8 0.22	40 1.33	832 13.64	45 0.94	88 2.48	6.3 0.10	0.4 0.02						3.8 0.02	33	ABS 0.0	1020	88
J. S. Dutra domestic and irrigation A.C.W.D. municipal	4S/1W-28B2 4S/1W-28C14	9-62 5-4-62		674 568	8.3	47 2.35	22 1.81	74 3.22	1.9 0.05	3 0.10	260 4.26	72 1.50	44 1.24	8.4 0.14	0.4 0.02	0.8 0.02	19	ABS 0.0	397	43	208	0	DWR		
								42 1.83					30 0.85												DWR
						36 1.80	20 1.66	43 1.87	2.0 0.05	0 0.00	194 3.18	55 1.15	36 1.02	3.5 0.06	0.2 0.01	0.3 0.02	22	ABS 0.00	309	35	173	14	USGS		
J. M. Braga domestic and irrigation Washington Twn. Hosp. hospital	4S/1W-28D4 4S/1W-28F5	9-62 5-4-62		1380 464	8.3	143 7.14	52 4.31	61 2.65	2.5 0.06	0 0.00	257 4.21	63 1.31	309 8.71	4.1 0.07	0.1 0.00	0.63	14		769	19	573	362	DWR		
								44 1.91					24 0.68											DWR	
						28 1.40	14 1.16	44 1.91	1.8 0.05	4 0.13	182 2.98	38 0.79	26 0.73	2.4 0.04	0.3 0.02	0.4 0.02	22	ABS 0.00	260	42	128	0	DWR		
C. Caldeira domestic	4S/1W-29J8	5-2-62		2410	8.3			160 6.92					484 13.65										DWR		
																								DWR	
						156 7.78	108 8.92	180 7.83	3.5 0.09	0 0.00	304 4.98	95 1.98	619 17.46	31 0.50	0.1 0.01	0.8 0.02	19	ABS 0.0	1580	32	835	586	DWR		
A.C.W.D. municipal	4S/1W-29L12	5-3-62		719	7.7	62 3.09	27 2.24	40 1.74	1.9 0.05	0 0.00	191 3.13	51 1.06	100 2.82	4.4 0.07	0.2 0.01	0.42	21		402 ^a	24	267	110	DWR		
																								USGS	
						63 3.14	31 2.54	45 1.96	2.0 0.05	0 0.00	149 2.44	50 1.04	155 4.37	5.7 0.09	0.0 0.00	0.4 0.02	25	ABS 0.0	537	25	284	162	DWR		
J. Silva domestic and irrigation A.C.W.D. municipal	4S/1W-30C2 4S/1W-30F3	5-3-62 5-2-62		5650 799																		DWR			
																							DWR		
						178 7.74							1740 49.07											DWR	

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown.

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c					
						equivalents per million										Total ppm	N.C. ppm						
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)						Nitrate (NO ₃)	Fluoride (F)	Boron (B)	Silica (SiO ₂)	Other constituents
						EAST BAY AREA OF SANTA CLARA VALLEY (2-9) (cont.)																	
A.C.W.D. municipal	4S/1W-30E3	9-62		735		19 0.95	7.7 0.63	131 5.70	1.8 0.05	8 0.27	208 3.41	54 1.12	90 2.54	1.2 0.02	0.3 0.02	0.4	21	ABS 0.0	425	78	79	0	USGS
W. E. Hutchins irrigation	4S/1W-31A2	5-2-62		798				42 1.83					102 2.88										DWR
A.C.W.D. municipal	4S/1W-31B3	5-2-62		730				58 2.52					104 2.93										DWR
		9-62		677	8.1	42 2.10	18 1.48	65 2.83	1.6 0.04	0 0.00	132 2.16	49 1.02	116 3.27	3.7 0.06	0.3 0.02	0.4	28	ABS 0.0	444	44	179	71	USGS
J. Pianetta irrigation	4S/1W-33E1	5-3-62		2850				179 7.79					740 20.87										DWR
		9-62		4120	7.5	483 24.10	119 9.78	137 5.96	4.2 0.11	0 0.00	92 1.51	75 1.56	1250 35.26	29 0.47	0.1 0.01	0.6	26	ABS 0.0	2470	15	1690	1620	USGS
Enrico and Sodini domestic and irrigation	4S/1W-33G3	5-3-62		1450				136 5.92					188 5.30										DWR
		9-62		1170	8.1	24 1.20	54 4.40	139 6.05	3.4 0.09	0 0.00	286 4.69	83 1.73	173 4.88	27 0.44	0.2 0.01	0.8	25	ABS 0.0	660	52	280	45	USGS
R. Clarkes domestic and irrigation	4S/1W-33K1	5-3-62		1180				118 5.13					108 3.04										DWR
		9-62		1000	8.5	9.6 1.90	52 2.84	139 6.05	3.4 0.09	15 0.50	286 4.69	84 1.75	99 2.79	50 0.81	0.2 0.01	0.9	26		583	56	237	0	USGS
B. Rose domestic	4S/1W-34Q4	5-3-62		1360				89 3.87					178 5.02										DWR
		9-62		1070	8.5	71 3.54	43 3.51	86 3.74	1.8 0.05	14 0.47	294 4.82	29 0.60	140 3.95	52 0.84	0.3 0.02	0.2	27	ABS 0.0	612	35	352	88	USGS
A.C.W.D. municipal	4S/1W-34R2	9-62		521	8.3	16 0.80	17 1.40	79 3.44	1.7 0.04	5 0.17	244 4.00	19 0.40	37 1.04	12 0.19	0.3 0.02	0.2	33	ABS 0.0	310	60	110	0	USGS
A.C.W.D. municipal	4S/1W-35P3	5-3-62		638		96 4.18							39 1.10										DWR

a. Determined by addition of constituent.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.6}{600}$ except as shown

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million equivalents per million										Total dissolved solids in ppm ^b	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
A.C.W.D. municipal	4S/1W-35P3	9-62		640	8.3	22 1.10	18 1.49	99 4.31	1.7 0.04	5 0.17	326 5.34	21 0.44	40 1.13	8.1 0.01	0.2 0.01	0.3	24	ABS 0.0	370	62	129	0	USGS
						44 1.80	8 1.08	81 3.52	1.5 0.04	10 0.33	289 4.74	41 0.85	18 0.51	2.0 0.03	0.0 0.00	0.2	25	ABS 0.0	359	55	144	0	USGS
	4S/2W-9Q2	6-20-62	67	4930	7.7	436 21.76	144 11.81	389 16.92	6.4 0.16	0 0.00	154 2.52	138 2.87	1610 45.40	1.8 0.03	0.2 0.01	0.40	27	ABS 0.0	2830 ^a	33	1680	1554	DWR
	4S/2W-10C1	5-8-62		516				46 2.00						25 0.70								DWR	
A.C.W.D. municipal	4S/2W-10N2	9-62		565	8.2	30 1.50	13 1.10	68 2.96	2.3 0.06	0 0.00	172 2.82	35 0.73	66 1.86	4.1 0.07	0.2 0.01	0.2	23	ABS 0.0	333	53	130	0	USGS
	4S/2W-10N2	5-3-62		766	7.7	51 2.54	14 1.12	94 4.09	1.7 0.04	0 0.00	274 4.49	57 1.19	74 2.09	2.4 0.04	0.2 0.01	0.56	21		451 ^a	52	183	0	DWR
A.C.W.D. municipal	4S/2W-10N6	9-62		1810	7.8	97 4.84	34 2.80	204 8.87	3.6 0.09	0 0.00	108 1.77	53 1.10	495 13.96	2.4 0.04	0.2 0.01	0.2	22	ABS 0.0	1170	53	382	293	USGS
Scutto Bros. irrigation and domestic	4S/2W-10Q2	5-7-62		2820				125 5.44					573 16.16										DWR
		9-62		2480	7.9	175 8.73	138 11.37	137 5.96	3.3 0.08	0 0.00	145 2.38	364 7.58	562 15.85	15 0.24	0.2 0.01	0.6	21	ABS 0.0	1870	23	1000	881	USGS
H. Dutra domestic and irrigation	4S/2W-11Q5	5-8-62		1500				93 4.04					124 3.50										DWR
		9-62		1290	7.9	99 4.94	54 4.46	94 4.09	1.7 0.04	0 0.00	314 5.15	102 2.12	112 3.16	184 2.97	0.4 0.02	0.4	22	ABS 0.0	884	30	470	213	USGS
S. May irrigation	4S/2W-13C2	6-6-62		1620				87 3.78					254 7.16										DWR
T. E. Harvey irrigation	4S/2W-14E1	9-2-62		4550	7.7	380 18.96	211 17.34	268 11.66	4.4 0.11	0 0.00	88 1.44	444 9.24	1290 36.39	8.8 0.14	0.2 0.01	0.4	23		3170	24	1820	1750	USGS
A. Caeton irrigation	4S/2W-14J1	5-7-62		708				39 1.70					54 1.52										DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ^{mg}/₁₀₀₀ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in ————— parts per million —————										Total dissolved solids in ppm ^b	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
A. Caeton irrigation	4S/2W-14J1	9-62		544	8.3	EAST BAY AREA OF SANTA CLARA VALLEY (2-9) (cont.)										326	31	189	59	USGS			
						34 1.70	25 2.08	39 1.70	2.1 0.05	7 0.23	145 2.38	57 1.19	50 1.41	10 0.16	0.3 0.02			0.4	25				
T. P. Harvey domestic and irrigation	4S/2W-15C1	5-8-62		608																			
								39 1.70					29 0.82										
King irrigation	4S/2W-15L4	9-62		458	8.1	31 1.55	17 1.41	41 1.78	2.1 0.05	0 0.00	178 2.92	44 0.92	28 0.79	11 0.18	0.2 0.01	0.2	24	ABS 0.0	276	37	148	2	USGS
W. D. Patterson irrigation	4S/2W-22P2	9-62		568	8.5	35 1.75	18 1.49	35 1.52	2.8 0.07	0 0.00	147 2.41	52 1.08	40 1.13	9.2 0.15	0.1 0.00	0.34	29	ABS 0.0	297	31	162	42	DWR
Patterson Ranch irrigation	4S/2W-23P2	5-3-62		621																			
L. Croce irrigation	4S/2W-24D4	9-62		595	8.1	68 3.39	13 1.09	34 1.48	2.0 0.05	0 0.00	211 3.46	55 1.14	48 1.35	5.8 0.09	0.2 0.01	0.37	23	ABS 0.0	356	25	224	51	DWR
Macado irrigation	4S/2W-24J1	5-3-62		602																			
M. Kitani domestic and irrigation	4S/2W-24L6	9-62		551	8.3	32 1.60	27 2.22	36 1.57	2.2 0.06	3 0.10	118 1.93	53 1.10	74 2.09	6.0 0.10	0.4 0.02	0.3	20		344	29	191	89	USGS
		9-62		580	8.6	67 3.34	20 1.66	32 1.39	1.7 0.04	17 0.57	227 3.72	50 1.04	32 0.90	6.3 0.02	0.4 0.10	0.2	22		361	22	250	36	USGS

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (USGS), Pacific Chemical Consultants (PCC), or State Department of Water Resources (DWR) as indicated.

d. Termol Testing Laboratory (TTL) or State Department of Water Resources (DWR) as indicated. 0.0 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^b	Per cent sodium	Hardness as CaCO ₃		Analyzed by c																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)				Boron (B)		Total ppm	N.C. ppm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
W. D. Patterson irrigation	4S/2W-26A1	9-62		1020	8.0	EAST BAY AREA OF SANTA CLARA VALLEY (2-9) (cont.)										592	27	371	193	DWR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
Abbau irrigation and stock	4S/2W-26J1	6-6-62		1440																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

a. Determined by addition of constituents.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per cent sulfur	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)			Fluoride (F)	Boron (B)		Silica (SiO ₂)	Other constituents	Total ppm	N.C. ppm
						SOUTH BAY AREA OF SANTA CLARA VALLEY (2-9)																
Winsor Bros. domestic	6S/1E-7C1	8-20-62	64	560	8.4	32 1.60	15 1.23	78 3.40	0.7 0.02	9.0 0.30	253 4.15	51 1.07	21 0.57	0.1 0.01	0.2	16		355	54	142	0	DMR
Y. Cortese irrigation	6S/1E-21G1	8-30-62	66	660	8.6	18 0.91	24 2.04	95 4.13	1.0 0.03	12 0.40	222 3.63	65 1.37	48 1.35	0.1 0.01	0.4	25		460	58	146	0	DMR
M. Muchado irrigation and domestic	6S/1E-30M1	8-22-62	71	500	8.5	37 1.85	19 1.55	50 2.17	1.1 0.03	9.0 0.30	232 3.80	35 0.72	23 0.65	0.1 0.01	0.2	22		336	39	170	0	DMR
J. S. García irrigation and domestic	6S/1W-11B1	8-20-62	67	600	8.3	42 2.11	28 2.30	51 2.20	1.1 0.03	4.2 0.14	266 4.36	34 0.70	49 1.37	0.1 0.01	0.2	22		380	33	221	0	DMR
R. T. Collier industrial	6S/1W-16A1	7-26-62	59	2100	7.9	126 6.31	85 6.99	210 9.13	2.5 0.06	0 0.00	101 1.65	134 2.81	631 17.8 ^a	0.1 0.01	0.4	17		1375	40	665	582	DMR
A. French domestic and irrigation	6S/1W-14E1	8-20-62	67	640	8.6	48 2.42	30 2.49	55 2.40	1.3 0.03	18 0.60	238 3.90	63 1.33	52 1.45	0.1 0.01	0.2	22		442	33	245	20	DMR
C. W. Dunton irrigation	6S/1W-17M1	8-62	440	8.6		19 0.94	5.7 0.47	75 3.25	0.7 0.02	9.0 0.30	216 3.54	16 0.35	16 0.45	0.1 0.01	0.2	14		278	70	70	0	DMR
Wilcox Bros.	6S/1W-2602	8-62	400	8.5		35 1.74	7.7 0.64	49 2.13	0.7 0.02	6.0 0.20	204 3.35	21 0.45	11 0.30	0.1 0.01	0.2	21		274	47	119	0	DMR
S. Weston	6S/1W-28R1	7-25-62	67	430	8.2	46 2.29	13 1.11	28 1.20	1.3 0.03	0 0.00	187 3.06	45 0.94	16 0.45	0.2 0.01	0.2	31		290	26	170	17	DMR
G. H. Fukumoto domestic and irrigation	6S/1W-29C1	7-26-62	66	550	8.6	51 2.53	21 1.69	40 1.75	0.9 0.03	12 0.40	262 4.30	22 0.46	22 0.63	0.1 0.01	0.2	20		316	29	211	0	DMR
Rezentes domestic	6S/2W-9H1	8-27-62	70	530	8.6	34 1.71	12 1.00	64 2.80	1.2 0.31	16 0.54	255 4.19	19 0.39	21 0.60	0.1 0.01	0.3	22		342	48	135	0	DMR
J. Joaquin	6S/2W-9K2	7-27-62	72	520	8.2	47 2.34	17 1.35	52 2.25	1.1 0.03	0 0.00	281 4.60	31 0.65	23 0.65	0.1 0.01	0.2	22		340	38	185	0	DMR
F. Ormonde	6S/2W-16R1	7-27-62	69	600	8.2	37 2.84	30 2.46	33 1.43	1.2 0.03	0 0.00	201 3.30	90 1.89	43 1.20	0.1 0.01	0.1	28		398	21	265	100	DMR
Calif. Water Service Co. municipal	6S/2W-20N1	8-27-62	70	630	8.1	46 2.30	27 2.22	58 2.52	1.1 0.03	0 0.00	296 4.85	14 0.31	43 1.20	0.1 0.01	0.24	24		400	36	226	0	DMR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ^{ppm} except as shown.

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos of 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)			Nitrate (NO ₃)	Fluoride (F)		Boron (B)	Silica (SiO ₂)	Other constituents	
																						Total ppm
Homm Bros. Slonaker domestic and irrigation H. Mantelli domestic and irrigation O. P. Gluhaich irrigation W. S. Bennet						SOUTH BAY AREA OF SANTA CLARA VALLEY (2-9) (Cont.)																
	6S/2N-24M3	8-24-62	71	460	8.4	30 1.52	17 1.40	47 2.05	0.8 0.02	3.6 0.12	218 3.57	28 0.59	21 0.57	0.0 0.00	0.1 0.01	0.2	25		310	41	146 0	DWR
	6S/2N-29D2	8-27-62	66	720	8.2	68 3.42	29 2.36	49 2.13	1.2 0.03	0 0.00	324 5.30	23 0.49	45 1.25	45 0.73	0.1 0.01	0.1	28		446	27	289 24	DWR
	6S/2N-34M1	8-28-62	70	500	8.6	32 2.61	26 2.10	24 1.05	0.7 0.02	12 0.40	253 4.15	14 0.28	23 0.65	15 0.24	0.1 0.01	0.1	24		314	18	235 8	DWR
	6S/2N-36H2	7-26-62	68	580	8.0	61 3.03	24 1.96	35 1.50	1.5 0.04	0 0.00	217 3.55	52 1.09	52 1.45	19 0.30	0.2 0.01	0.2	24		404	23	250 73	DWR
	7S/1W-5P1	7-26-62	71	440	8.2	38 1.90	17 1.42	30 1.30	1.1 0.03	0 0.00	189 3.10	33 0.68	21 0.57	12 0.19	0.1 0.01	0.2	22		290	28	166 11	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{as}}{\text{as}}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
						equivalents per million										Silica (SiO ₂)	Other constituents ^d					
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)						Nitrate (NO ₃)	Fluoride (F)	Boron (B)	
LIVERMORE VALLEY (2-10)																						
T. P. Bishop Co. irrigation	2S/1W-22A1	6-14-62	66	898	8.0	48 2.40	16 1.36	112 4.87	1.9 0.05	0 0.00	245 4.02	12 0.25	158 4.46	0.9 0.01	0.1 0.00	0.31	28	ABS 0.0	56	188	0	DWR
City of Livermore industrial and stock	2S/2E-27K1	6-19-62		6490	7.9	270 13.47	62 5.09	1040 45.24	2.4 0.06	0 0.00	133 2.18	34 0.71	2140 60.35	1.2 0.02	0.8 0.04	36	27	ABS 0.0	71	929	820	DWR
H. Garavente stock	2S/2E-35C1	6-14-62		8180	8.6	100 4.99	29 2.40	1720 74.82	8.6 0.22	60 2.00	523 8.57	18 0.37	2500 70.50	2.4 0.04	0.9 0.05	69	13	ABS 0.0	91	370	0	DWR
F. Gustanich domestic	2S/2E-35G2	6-14-62		2620	8.4	56 2.79	47 3.90	448 19.49	1.3 0.03	13 0.43	359 5.88	80 1.66	642 18.10	22 0.35	1.1 0.06	6.9	22		74	335	19	DWR
J. Nevin domestic	3S/1W-1G1	6-14-62	62	914	8.1	66 3.29	34 2.80	79 3.44	0.9 0.02	0 0.00	317 5.20	96 2.00	83 2.34	2.3 0.04	0.6 0.03	0.34	23	ABS 0.0	36	305		
Alameda Co. Sheriff	3S/1E-3Q1	6-12-62		1260	8.4	55 2.74	49 4.05	158 6.87	1.4 0.04	5 0.17	494 8.10	72 1.50	122 3.44	30 0.48	0.4 0.02	4.0	28	ABS 0.0	50	340	0	DWR
Lemas	3S/1E-8H1	1-17-62		1140												1.6				359		DWR
U. S. Air Force domestic and irrigation	3S/1E-8H3	6-15-62	64	685	8.4	29 1.45	49 4.00	40 1.74	1.5 0.04	3 0.10	234 3.84	54 1.12	69 1.94	9.6 0.15	0.2 0.01	0.49	36	ABS 0.0	24	273	76	DWR
U. S. Air Force irrigation	3S/1E-8H5	1-17-62	63	789												0.61				319		DWR
	3S/1E-9A1	7-3-62		1550	8.3	50 2.50	63 5.15	202 8.79	1.9 0.05	0 0.00	560 9.18	85 1.77	178 5.02	30 0.48	0.3 0.02	2.7	29	ABS 0.0	53	383	0	DWR
	3S/1E-9D1	5-29-62	64	2000	8.2	63 3.14	107 8.77	172 7.48	2.0 0.05	0 0.00	169 2.77	276 5.75	399 11.25	14 0.22	0.2 0.01	1.6	38		38	596	458	DWR
E. M. Kamp	3S/1E-9K2	1-17-62		1130												1.1				472		DWR
		6-18-62	62	1020	8.4	34 1.70	74 6.11	64 2.78	2.3 0.06	2 0.07	280 4.59	80 1.66	135 3.81	26 0.42	0.0 0.00	1.4	24	ABS 0.0	26	391	158	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

d. Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

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QUALITY OF GROUND WATERS IN CALIFORNIA
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1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^b	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c						
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm			
M. Nielsen irrigation	3S/1E-9L1	1-17-62		1270													1.0			808						DWR
		6-15-62	63	1450	8.1	81 4.04	96 7.87	71 3.09	2.6 0.07	0	456 7.47	99 2.06	202 5.70	16 0.26	0.2 0.01	1.4	26	ABS 0.0		20	596	222				DWR
	3S/1E-9P1	1-17-62		1230												0.93			1110							DWR
Busch Brothers domestic	3S/1E-9R1	1-17-62		698												0.29			426							DWR
	3S/1E-10E2	6-15-62		1460	7.8	84 4.19	85 7.02	82 3.57	4.7 1.20	0	676 11.08	67 1.39	136 3.84	0.2 0.00	0.2 0.01	2.0	14	ABS 0.0		22	561	7				DWR
	3S/1E-10Q1	6-15-62		614	8.4	57 2.84	30 2.49	24 1.04	1.8 0.05	4	246 4.03	54 1.12	37 1.04	8.1 0.13	0.2 0.01	0.33	21	ABS 0.0		16	267	59				DWR
Jamieson irrigation	3S/1E-11D1	6-12-62	64	1050	8.4	25 1.25	61 5.00	96 4.18	2.0 0.05	4	268 4.39	52 1.08	159 4.48	21 0.34	0.2 0.01	1.3	31	ABS 0.0		40	313	87				DWR
	3S/1E-11E1	6-18-62	63	1170	8.3	67 3.34	88 7.27	47 2.04	2.3 0.06	0	400 6.56	48 1.00	161 4.54	26 0.42	0.2 0.01	0.60	29	ABS 0.0		16	531	203				DWR
	3S/1E-11H1	6-15-62		684	8.5	43 2.14	54 4.45	27 1.17	1.7 0.04	9	287 4.70	38 0.79	44 1.24	21 0.34	0.2 0.01	0.37	25	ABS 0.0		15	330	80				DWR
A. H. Hagemann drainage	3S/1E-12B1	9-7-62		1650	8.3	73 3.64	85 7.01	154 6.70	2.4 0.06	0	534 8.75	23 0.48	300 8.46	22.0 0.03	0.1 0.00	1.0	29	PO ₄ 0.13 (Total) ABS 0.0		38	533	95				DWR
	3S/1E-13P2	6-19-62	62	670	8.3	22 1.10	10 0.82	125 5.44	1.5 0.04	0	180 2.95	31 0.64	36 1.02	8.0 0.13	0.3 0.02	0.27	41	ABS 0.0		74	96	0				DWR
H. J. Kaiser Inds. domestic	3S/1E-15L1	6-15-62	63	537	8.3	51 2.54	26 2.12	26 1.13	1.2 0.03	0	223 3.65	36 0.75	32 0.90	15 0.24	0.2 0.01	0.25	24	ABS 0.0		19	233	50				DWR
	3S/1E-16P1	6-15-62		597	8.5	56 2.79	22 1.79	41 1.78	2.6 0.07	6	266 4.36	39 0.81	32 0.90	5.0 0.08	0.6 0.03	0.32	21	ABS 0.0		28	229	0				DWR
M. Kruse irrigation	3S/1E-17H2	6-19-62		796	8.1	59 2.94	43 3.57	31 1.35	1.8 0.05	0	310 5.08	50 1.04	59 1.66	11 0.18	0.2 0.01	0.41	23	ABS 0.0		17	326	72				DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{mg}}{\text{gall}}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

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						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Polys-carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)			Ni-trate (NO ₃)	Fluo-ride (F)		Boran (B)	Silica (SiO ₂)	Other constituents	Total ppm
						LIVERMORE VALLEY (2-1b) (Cont.)																
Pleasanton Twp. W. D.	3S/1E-17R1	6-15-62		528	8.4	48 2.40	21 1.76	32 1.39	1.6 0.04	3 0.10	221 3.62	39 0.81	32 0.90	4.8 0.08	0.9 0.05	0.33	18	ABS 0.0		208	22	DWR
San Francisco W. D. Irrigation	3S/1E-19A5	6-15-62	63	616	8.1	55 2.74	31 2.57	30 1.30	1.7 0.04	0 0.00	265 4.34	53 1.10	30 0.85	13 0.21	0.2 0.01	0.43	21	ABS 0.0		266	49	DWR
City of Pleasanton abandoned	3S/1E-20Q2	9-5-62		1530	7.6	87 4.34	85 6.97	139 6.05	0.6 0.02	0 0.00	760 12.46	55 1.14	137 3.86	0.4 0.01	0.3 0.02	0.9	18	PO ₄ 0.0 (Total) ABS 0.0		566	0	DWR
City of Pleasanton abandoned	3S/1E-29B1	9-5-62		1360	8.2	28 1.40	79 6.47	158 6.87	7.5 0.19	0 0.00	605 9.92	14 0.29	158 4.46	17 0.27	0.2 0.01	0.8	8.9	PO ₄ 0.01 (Total) ABS 0.0		394	0	DWR
California Water Service municipal	3S/2E-4H1	6-19-62	63	733	8.5	35 1.75	40 3.26	59 2.57	1.5 0.04	8 0.27	285 4.67	30 0.62	60 1.69	25 0.40	0.2 0.01	0.76	30	ABS 0.0		251	3	DWR
J. Schenone irrigation	3S/2E-4M1	6-14-62		2150	8.0	98 4.89	102 8.38	254 11.05	2.0 0.05	0 0.00	573 9.39	402 8.37	231 6.51	0.2 0.00	0.4 0.02	4.4	41	ABS 0.0		664	194	DWR
H. L. Hagemann domestic and irrigation	3S/2E-7K1	6-12-62		677	8.3	43 2.14	52 4.25	25 1.09	1.6 0.04	0 0.00	337 5.52	40 0.83	32 0.90	20 0.32	0.1 0.00	0.40	26	ABS 0.0		320	44	DWR
California Water Ser. municipal	3S/2E-8H1	6-12-62		706	8.6	44 2.20	50 4.15	34 1.48	1.9 0.05	14 0.47	297 4.87	38 0.79	43 1.21	30 0.48	0.2 0.01	0.45	28	ABS 0.0		318	51	DWR
Amling Devore Nursery domestic and irrigation	3S/2E-10H1	6-14-62	68	814	8.5	43 2.14	33 2.72	83 3.61	2.0 0.05	8 0.27	257 4.21	62 1.29	83 2.34	19 0.31	0.3 0.02	1.3	30	ABS 0.0		243	19	DWR
B. G. Wood irrigation	3S/2E-29D1	6-14-62		762	8.5	62 3.09	32 2.64	53 2.30	1.8 0.05	6 0.20	276 4.52	59 1.23	66 1.86	12 0.19	0.2 0.01	0.49	24	ABS 0.0		287	52	DWR
J. Amaral	3S/3E-19C1	6-14-62		1600	8.5	30 1.50	46 3.75	262 11.40	2.4 0.06	13 0.43	495 8.11	101 2.10	213 6.01	1.8 0.03	0.5 0.03	6.9	25	ABS 0.0		263	0	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.), as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{mg}}{\text{L}}$ except as shown.

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm
S. H. Gandrup domestic and irrigation	M D B & M 11S/2E-27A1	5-3-62	729	8.0	57 2.84	33 2.71	55 2.40	2 0.04	0 0.00	292 4.79	52 1.08	63 1.77	0 0.00	0.7 0.04	0.04	21	38	DWR					
F. T. Blake domestic and irrigation	12S/1E-11L1	5-2-62	400	8.2	31 1.57	20 1.69	21 0.92	2 0.04	0 0.00	197 3.23	14 0.28	30 0.84	2 0.03	0.7 0.03	0.35	36	1	DWR					
Sunset Beach Park domestic	12S/1E-11L1	5-2-62	416	8.0	28 1.42	23 1.93	22 0.95	2 0.04	0 0.00	189 3.10	17 0.36	33 0.92	9 0.15	0.3 0.01	0.10	36	13	DWR					
J. Roacha irrigation	12S/1E-14J1	5-2-62	449	8.0	26 1.31	18 1.46	28 1.20	1 0.03	0 0.00	59 0.97	18 0.39	67 1.87	37 0.59	0.17 0.01	0.22	28	90	DWR					
E. L. Padden domestic	12S/1E-23R1	5-2-62	576	8.2	30 1.48	28 2.26	52 2.25	12 0.32	0 0.00	288 4.71	38 0.78	38 1.06	0 0.00	0.2 0.01	0.29	20	0	DWR					
H. Trafion irrigation	12S/1E-24G1	5-2-62	545	8.1	39 1.95	30 2.50	30 1.27	4 0.09	0 0.00	274 4.50	17 0.36	34 0.94	0 0.00	0.3 0.01	0.13	27	0	DWR					
domestic	12S/1E-24Q	5-2-62	457	8.0	27 1.37	22 1.83	37 1.62	5 0.13	0 0.00	225 3.68	14 0.31	25 0.70	0 0.00	0.1 0.00	0.13	23	0	DWR					
		9-5-62	466				34 1.48					17 0.48						DWR					

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b. Gravimetric determination.

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						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Polys-carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm		
A. L. Wanganan irrigation	M D B & M							PAJARO VALLEY (3-2) (Cont.)																	
	12S/2E-7K1	5-2-62		421	8.3	38 1.90	11 0.92	29 1.24	2 0.06	0 0.00	177 2.88	20 0.43	33 0.92	0 0.00	0 0.00	0.3 0.01	0.27	6		295	30	141	0	DWR	
		9-5-62	63	492				22 0.96						17 0.48										DWR	
	12S/2E-12E1	5-24-62	61	1360	7.65	84 4.20	102 8.35	71 3.10	2 0.06	0 0.00	573 9.40	198 4.13	85 2.38	3 0.05	0.53 0.03	0.58	26		1040	20	628	158	DWR		
Sheehy irrigation		9-5-62	62	1260				66 2.87						72 2.03										DWR	
	12S/2E-16J1	5-24-62	64	770	8.15	61 3.07	40 3.28	53 2.28	2 0.05	0 0.00	426 6.99	21 0.46	49 1.37	0 0.00	0.17 0.01	0.54	30		595	26	318	0	DWR		
Struve irrigation	12S/2E-18A3	5-2-62	67	470	8.3	44 2.20	19 1.62	30 1.31	2 0.05	0 0.00	236 3.89	31 0.67	20 0.55	0 0.00	0.5 0.03	0.10	15		345	25	191	36	DWR		
		4-2-62		507	7.85	47 2.36	22 1.78	30 1.28	2 0.05	0 0.00	242 3.97	51 1.07	24 0.67	0 0.00	0 0.00	0.65	29	Fe 0.07 Total Al 0.32 As 0.00 Cu 0.00 Pb 0.01 Mn 0.14 Zn 0.24	390	23	207	8	DWR		
City of Watsonville domestic and industrial	12S/2E-18K2	5-2-62		446	8.2	44 2.21	17 1.44	23 1.10	2 0.05	0 0.00	223 3.65	35 0.72	21 0.58	0 0.00	0.4 0.02	0.19	29		340	23	183	0	DWR		
		9-5-62		443				24 1.04					14 0.39											DWR	
T. E. Trafton irrigation	12S/2E-1981	9-5-62	67	530	8.2	42 2.10	30 2.45	35 1.50	2.3 0.06	0 0.00	275 4.51	38 0.79	25 0.70	0.0 0.00	0.1 0.01	0.2	36		374	25	227	2	DWR		
	12S/2E-19M1	9-5-62	67	700	8.2	46 2.30	40 3.32	37 1.60	2.6 0.07	0 0.00	185 3.03	58 1.20	101 2.85	0.0 0.00	0.2 0.01	0.2	28		430	22	281	129	DWR		
M. Williamson irrigation and domestic	12S/2E-30E1	7-23-62	62	13500	7.4	1212 60.50	1161 95.50	225 9.80	7.5 0.19	0 0.00	88 1.45	506 10.55	5452 153.75	0.0 0.00	0.1 0.01	0.1	16		10020	5.9	7800	7728	DWR		
	12S/2E-30N1	7-23-62	61	650	8.3	37 1.84	33 2.68	47 2.05	2.1 0.05	3 0.10	156 2.57	67 1.39	60 1.70	55 0.88	0.1 0.01	0.1	27		404	31	226	93	DWR		

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b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{100}$ except as shown.

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						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Potas-Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)			Ni-t-ate (NO ₃)	Fluo-ride (F)		Boron (B)	Silica (SiO ₂)	Other constituents ^d	Total ppm	N.C. ppm		
Ranger domestic and irrigation	M D B & M							PAJARO VALLEY (3-2)	(Cont.)																
	12S/2E-31A1	5-2-62	674	8.3	47 2.35	26 2.11	48 2.07	3 0.07	0 0.00	260 4.25	61 1.27	49 1.37	0 0.00	0.1 0.00	0.21 0.00	24			465	31	223	61	DWR		
		9-5-62	692				41 1.78						44 1.24										DWR		
	12S/2E-31C1	7-23-62	61	8.0	26 1.31	16 1.25	47 2.05	1.8 0.05	0 0.00	77 1.27	17 0.36	72 2.03	59 0.95	0.1 0.01	0.1 0.01	0.1	38		308	44	128	64	DWR		
F. Tronavaca irrigation	12S/2E-31K1	7-24-62	68	7.5	73 3.64	49 4.00	65 2.83	3.0 0.08	0 0.00	218 3.56	69 1.44	184 5.20	11 0.18	0.1 0.01	0.2	27		588	27	382	204	DWR			
S. H. Cowell irrigation	12S/2E-32C1	7-24-62	60	8.4	40 1.99	31 2.55	35 1.50	2.3 0.06	10.8 0.36	181 2.97	54 1.13	55 1.55	3.2 0.05	0.1 0.01	0.1	33		384	25	227	60	DWR			
Johnson irrigation and domestic	12S/2E-32K1	5-2-62	432	7.7	25 1.23	5 0.37	53 2.30	1 0.03	0 0.00	62 1.01	4 0.08	81 2.27	37 0.60	0.4 0.02	0.12	30		285	59	80	29	DWR			
		9-5-62	481				48 2.09					68 1.92										DWR			
L. Banovac irrigation	12S/3E-7B1	5-24-62	61	7.8	81 4.05	68 5.57	97 4.20	3 0.07	0 0.00	390 6.40	221 4.61	98 2.75	0 0.00	0.2 0.01	0.77	31		910	30	481	161	DWR			
		9-6-62	60	1250			84 3.65					85 2.40										DWR			
Hurley domestic and irrigation	13S/1E-1A1	7-23-62	64	8.4	94 4.69	63 5.15	85 3.70	3.2 0.08	10.2 0.34	199 3.26	77 1.61	289 8.15	8.2 0.13	0.1 0.01	0.2	27		832	27	492	312	DWR			
M. Vaughn domestic and irrigation	13S/2E-1K1	7-31-62	64	8.0	12 0.59	10 0.84	28 1.20	0.9 0.03	0 0.00	87 1.43	1.9 0.04	28 0.80	18 0.29	0.1 0.01	0.0	44		194	45	72	0	DWR			
	13S/2E-5M1	8-15-62	64	8.4	83 4.15	56 4.62	91 3.95	3.9 0.10	9.0 0.30	285 4.67	187 3.90	106 3.00	59 0.95	0.1 0.01	0.1	31		810	31	438	190	DWR			
Farley Fruit Co. abandoned	13S/2E-6B1	6-14-62	63	7.7	78 3.89	54 4.44	121 5.26	3.0 0.08	0 0.00	255 4.18	123 2.56	221 6.23	38 0.61	0.2 0.01	0.16	34		797	38	417	208	DWR			
G. H. Hurley irrigation	13S/2E-6E2	7-24-62	64	8.2	71 3.53	23 3.87	138 6.00	3.0 0.08	0 0.00	197 3.23	112 2.34	262 7.40	20 0.32	0.1 0.01	0.2	46		792	45	370	8	DWR			

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b. Gravimetric determination.

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						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)			Boron (B)	Silica (SiO ₂)		Total ppm	N.C. ppm			
F. Caparro domestic and irrigation	M O B & M 13S/2E-6P1	5-2-62		1120	8.3	18 0.89	3 0.27	244 10.60	5 0.13	0	216 3.53	118 2.46	194 5.46	0 0.00	0.4 0.02	0.04	13	780	89	58	0	DWR			
						192 8.35						148 4.17											DWR		
Giberson irrigation	13S/2E-6R1	8-15-62	68	740	8.5	51 2.53	36 3.03	51 2.20	3.9 0.10	9.0 0.30	235 3.85	54 1.13	86 2.43	0.0 0.00	0.1 0.01	0.3	35	465	28	278	71	DWR			
										GILROY-HOLLISTER BASIN (3-3)										a					
T. Andrade irrigation	9S/3E-25N3	6-11-62		455	8.2	34 1.70	24 1.94	24 1.04	1.6 0.04	0	194 3.18	22 0.46	20 0.56	27 0.44	0.2 0.01	0.11	28	276	22	182	23	DWR			
P. L. Hudson irrigation	10S/3E-1E2	6-11-62		420	8.0	34 1.70	26 2.10	13 0.56	0.9 0.02	0	187 3.06	21 0.44	15 0.42	24 0.39	0.2 0.01	0.20	26	252	13	190	37	DWR			
J. Orlando domestic and irrigation	10S/3E-23J1	6-13-62		447	7.8	32 1.60	26 2.14	19 0.83	0.4 0.01	0	186 3.05	15 0.31	20 0.56	34 0.55	0.2 0.01	0.07	34	272	18	187	35	DWR			
E. H. Henderson domestic and irrigation	10S/3E-26J1	6-13-62	64	411	7.6	33 1.65	22 1.83	15 0.65	0.4 0.01	0	162 2.66	20 0.42	22 0.62	23 0.37	0.2 0.01	0.08	39	255	16	174	41	DWR			
E. E. Davis domestic	10S/4E-17F1	6-12-62		662	8.2	27 1.35	43 3.57	53 2.30	1.4 0.04	0	334 5.47	19 0.40	46 1.30	1.4 0.02	0.2 0.01	0.13	21	376	32	246	0	DWR			
E. Nichols domestic and irrigation	10S/4E-18G2	6-12-62		445	7.9	37 1.85	25 2.09	16 0.70	0.9 0.02	0	210 3.44	29 0.60	14 0.39	18 0.29	0.2 0.01	0.17	28	271	15	197	25	DWR			
W. Henzi domestic and irrigation	10S/4E-18J1	6-12-62		461	8.2	34 1.70	25 2.04	26 1.13	1.4 0.04	0	229 3.75	21 0.44	19 0.54	10 0.16	0.2 0.01	0.13	28	277	23	187	0	DWR			
D. Wolfe domestic and irrigation	10S/4E-28O2	6-13-62		476	8.2	26 1.30	30 2.50	30 1.30	0.6 0.02	0	239 3.92	17 0.35	23 0.65	4.4 0.07	0.2 0.01	0.11	24	273	25	190	0	DWR			
A. L. McGlashan irrigation and domestic	10S/4E-34L5	6-13-62		745	7.3	52 2.59	40 3.30	46 2.00	0.8 0.02	0	322 5.28	28 0.58	46 1.30	43 0.69	0.2 0.01	0.13	28	442	25	295	31	DWR			
	11S/4E-31Z2	6-13-62	71	480	8.2	40 2.00	19 1.56	34 1.48	1.3 0.03	0	242 3.97	28 0.58	16 0.45	3.8 0.06	0.2 0.01	0.14	25	286	29	178	0	DWR			
J. D. Fair domestic	11S/4E-21B2	6-13-62		640	8.1	61 3.04	35 2.85	24 1.04	1.4 0.04	0	278 4.56	52 1.08	22 0.62	37 0.60	0.2 0.01	0.17	26	396	15	295	67	DWR			

a. Determined by addition of constituents.
b. Gravimetric determination.
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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{mg}{l}$ except as shown.

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm ^a	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm
						GILROY-HOLLISTER BASIN (3-3) (Cont.)																	
F. Smith irrigation	11S/5E-26Q3	6-13-62		1010	8.2	45 2.24	23 1.88	157 6.83	1.1 0.03	0 0.00	351 5.75	14 0.29	0.5 0.01	0.2 0.01	2.6 0.01	20	206	0	DWR				
C. R. Lanini domestic	11S/5E-27M1	6-13-62		555	8.3	50 2.50	28 2.28	27 1.17	1.2 0.03	0 0.00	249 4.08	43 0.90	4.1 0.07	0.2 0.01	0.32 0.01	16	239	35	DWR				
Perry Morse Seed Co. irrigation	12S/4E-34P2	6-13-62	64	1880	7.5	217 10.83	68 5.59	133 5.78	2.3 0.06	0 0.00	483 7.92	381 7.93	27 0.44	0.6 0.03	0.8 0.03	26	822	426	DWR				
Olympia School domestic	12S/4E-35C1	6-13-62		1580	8.0	75 3.74	99 8.11	148 6.44	2.8 0.07	0 0.00	550 9.01	321 6.68	0.4 0.01	0.5 0.03	1.0 0.03	27	593	142	DWR				
Manuel Diaz domestic	12S/4E-36G1	6-13-62		1870	7.8	91 4.54	124 10.20	166 7.22	3.0 0.08	0 0.00	584 9.57	425 8.85	2.4 0.04	0.4 0.02	0.96 0.02	28	738	259	DWR				
W. Daly irrigation	12S/5E-9N2	6-13-62		1800	8.2	43 2.14	121 9.93	174 7.57	3.7 0.09	0 0.00	367 6.02	388 8.08	29 0.47	0.4 0.02	1.3 0.02	25	604	303	DWR				
J. Lomanto irrigation	12S/5E-12M3	6-13-62		1290	8.2	87 4.34	58 4.73	108 4.70	2.3 0.06	0 0.00	396 6.49	123 2.56	5.6 0.09	0.2 0.01	4.3 0.01	42	454	129	DWR				
F. Freitas domestic and irrigation	12S/5E-33A1	6-13-62		1770	7.7	91 4.54	124 10.24	150 6.52	3.1 0.08	0 0.00	803 13.16	255 5.31	7.2 0.12	0.4 0.02	1.0 0.02	31	740	82	DWR				
P. Rovella domestic and irrigation	12S/5E-36A1	6-13-62		1310	8.5	13 0.65	16 1.33	266 11.57	2.0 0.05	12 0.40	478 7.83	69 1.44	0.4 0.01	0.3 0.02	1.6 0.02	28	99	0	DWR				
S. Brandon domestic and stock	12S/6E-7N2	6-13-62		412	8.1	16 0.80	12 0.98	56 2.44	3.7 0.09	0 0.00	214 3.51	0 0.00	3.8 0.06	0.2 0.01	0.76 0.01	64	89	0	DWR				
E. F. Broadfoot domestic	12S/6E-19E2	6-13-62		1500	8.5	32 1.60	28 2.28	244 10.61	2.0 0.05	10 0.33	338 5.54	0 0.00	0.4 0.01	0.2 0.01	18 0.01	37	194	0	DWR				
C. T. Pillsbury domestic and irrigation	12S/6E-31B1	6-13-62		2410	8.5	46 2.30	56 4.61	404 17.57	2.4 0.06	13 0.43	502 8.23	112 2.33	1.0 0.02	0.1 0.00	3.4 0.00	18	346	0	DWR				
First Presbyterian Church domestic	13S/5E-3J1	6-13-62	64	1310	8.4	59 2.94	69 5.65	129 5.61	2.6 0.07	8 0.27	345 5.65	251 5.22	6.5 0.10	0.5 0.03	0.95 0.03	23	430	133	DWR				
Victor Lompo irrigation	13S/5E-11B5	6-13-62		1500	8.0	62 3.09	88 7.26	139 6.05	3.0 0.08	0 0.00	399 6.54	294 6.12	9.8 0.16	0.4 0.02	0.99 0.02	23	518	191	DWR				

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b. Gravimetric determination.

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)			Fluoride (F)	Boron (B)		Silica (SiO ₂)	Total ppm	N.C. ppm	
Lompo Brothers irrigation	13S/5E-11G1	6-13-62		1420	8.1	53 2.64	81 6.63	141 6.13	3.0 0.08	0 0.00	401 6.57	244 5.08	117 3.30	21 0.34	0.4 0.02	1.4	25		884	40	464 135	DMR
						GILROY-HOLLISTER BASIN (3-3) (cont.)																
C. McGinnis domestic and irrigation	12S/3E-19M1	7-30-62		350	8.1	19 0.95	11 0.90	39 1.70	0.8 0.03	0 0.00	100 1.63	3.8 0.08	58 1.63	8.5 0.14	0.2 0.01	0.0	44		228	48	93 11	DMR
						SALTINAS VALLEY (3-4)																
H. Fukuba irrigation	12S/3E-30A1	7-30-62	68	465	8.0	30 1.52	12 0.98	44 1.90	1.8 0.05	0 0.00	81 1.33	16 0.35	72 2.03	36 0.58	0.1 0.01	0.0	36		296	43	125 58	DMR
Monterey Bay Salt Co. domestic and industrial	13S/2E-7R1	7-16-62	72	820	8.5	18 0.85	4.6 0.38	170 7.40	3.5 0.09	9.0 0.30	226 3.70	86 1.81	96 2.70	0.9 0.01	0.1 0.01	0.2	47		588	85	62 0	DMR
R. Bowen - Elkhorn irrigation	13S/2E-10J1	7-31-62	72	460	8.4	25 1.23	14 1.15	54 2.35	1.4 0.04	6 0.20	168 2.75	5.3 0.11	60 1.71	0.0 0.00	0.2 0.01	0.1	42		291	49	119 0	DMR
R. M. Cheek domestic and irrigation	13S/2E-13N1	7-31-62	72	237	7.9	9.4 0.47	6.8 0.56	30 1.30	0.9 0.03	0 0.00	67 1.10	2.9 0.06	38 1.07	1.8 0.03	0.2 0.01	0.1	46		169	55	52 0	DMR
M. Minhoto irrigation	13S/2E-16E1	8-6-62	68	1090	7.7	61 3.06	34 2.76	110 4.80	5.7 0.15	0 0.00	219 3.58	31 0.65	223 6.30	3.1 0.05	0.1 0.01	0.2	36		611	45	291 112	DMR
Delfino and Calcagno domestic and irrigation	13S/2E-17H1	7-16-62	66	1350	8.3	62 3.12	36 2.99	174 7.55	8.3 0.21	3.0 0.10	162 2.65	37 0.76	362 10.20	2.2 0.03	0.1 0.01	0.2	38		802	54	306 169	DMR
T. Leonardini domestic and irrigation	13S/2E-19R1	7-16-62	66	885	8.4	56 2.76	25 2.06	96 4.17	2.8 0.07	4.2 0.14	192 3.16	26 0.55	184 5.20	0.9 0.01	0.1 0.01	0.1	37		527	46	241 76	DMR
J. Tate domestic and irrigation	13S/2E-20J1	7-16-62	68	1130	8.1	65 3.24	37 3.05	105 4.55	2.5 0.06	0 0.00	113 1.85	68 1.42	264 7.45	0.0 0.00	0.1 0.01	0.1	43		641	42	315 222	DMR
J. J. King irrigation	13S/2E-31D2	7-16-62	70	685	8.3	30 1.47	16 1.26	89 3.87	2.8 0.07	3.0 0.10	170 2.80	21 0.45	123 3.45	1.3 0.02	0.1 0.01	0.2	37		407	58	136 0	DMR
Molera Estates domestic	13S/2E-31K2	7-17-62	67	545	8.5	22 1.13	14 1.15	66 3.30	2.4 0.06	9.0 0.30	215 3.52	11 0.22	60 1.70	1.3 0.02	0.1 0.01	0.1	29		320	58	114 0	DMR
E. Bellone irrigation	13S/2E-31N2	7-17-62	70	800	8.2	38 1.90	19 1.63	103 4.47	2.7 0.07	0 0.00	183 3.00	19 0.41	162 4.55	0.9 0.01	0.1 0.01	0.2	31		466	55	176 26	DMR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{100}$ except as shown

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						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-t- rate (NO ₃)	Fluo-ride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm
						SALINAS VALLEY (3-4) (Cont'd.)																	
E. Bellone irrigation	13S/2E-31N2	7-17-62	72	980	8.2	60 2.99	28 3.31	95 4.13	3.2 0.08	0 0.00	114 1.87	51 1.07	229 6.45	1.3 0.02	0.1 0.01	0.2	33		556	39	315	222	DWR
	13S/2E-32A2	7-16-62	72	500	8.4	19 0.97	16 1.32	62 2.70	2.7 0.07	3.0 0.10	149 2.45	14 0.29	73 2.05	0.9 0.01	0.1 0.01	0.1	33		298	53	115	0	DWR
O. P. Overhouse irrigation	13S/2E-32C1	7-16-62	66	495	8.5	58 2.86	2.7 0.22	51 2.20	2.3 0.06	6.0 0.20	198 3.25	12 0.24	53 1.48	0.4 0.01	0.1 0.01	0.1	31		314	41	154	0	DWR
	13S/2E-32N1	7-17-62	70	490	8.4	24 1.23	11 0.88	67 2.90	2.4 0.06	3.6 0.12	167 2.73	22 0.47	60 1.70	0.9 0.01	0.1 0.01	0.1	33		306	57	106	63	DWR
C. Rossotti domestic and irrigation	13S/2E-33R1	7-19-62	66	735	8.4	76 3.79	22 1.82	53 2.30	2.8 0.07	9.0 0.30	223 3.65	74 1.54	82 2.30	8.5 0.14	0.1 0.01	0.1	34		494	29	280	82	DWR
	13S/3E-4L1	8-1-62	68	320	8.0	14 0.72	9.5 0.74	37 1.60	1.1 0.03	0 0.00	87 1.44	3.4 0.07	46 1.30	9.8 0.16	0.1 0.01	0.2	44		230	52	73	1	DWR
F. B. Tagana domestic and irrigation	13S/3E-20B2	7-26-62	63	285	7.9	16 0.82	6.0 0.50	34 1.47	0.7 0.02	0 0.00	86 1.42	4.8 0.10	43 1.20	3.2 0.05	0.1 0.01	0.0	37		186	52	66	0	DWR
	13S/3E-29A1	7-26-62	64	570	7.9	19 0.94	15 1.20	69 3.00	1.1 0.03	0 0.00	82 1.35	13 0.28	124 3.50	2.7 0.04	0.2 0.01	0.0	44		336	58	107	39	DWR
C. Lightfoot domestic and irrigation	14S/1E-24Q2	7-12-62	61	1060	7.0	63 3.20	35 2.24	103 4.47	2.0 0.05	0 0.00	46 0.75	73 1.53	145 4.10	208 3.35	0.1 0.01	0.1	29		720	47	300	262	DWR
	14S/1E-25K1	7-12-62	59	500	7.0	26 1.30	16 1.28	49 2.13	1.9 0.05	0 0.00	37 0.60	20 0.43	84 2.35	77 1.25	0.1 0.01	0.1	23		290	45	129	99	DWR
Marina del Mar School domestic and irrigation	14S/2E-6Q1	7-17-62	72	535	8.4	34 1.69	10 0.84	70 3.05	3.2 0.08	9.0 0.30	193 3.17	30 0.63	60 1.60	1.3 0.02	0.1 0.01	0.1	35		366	54	127	0	DWR
	14S/2E-6R2	7-17-62	72	510	8.4	34 1.72	11 0.94	63 2.75	2.3 0.06	6.0 0.20	197 3.23	23 0.48	51 1.43	1.3 0.02	0.1 0.01	0.1	35		348	50	133	0	DWR
E. Struve irrigation	14S/2E-8N2	8-7-62	72	500	7.8	34 1.71	13 1.12	53 2.30	2.3 0.06	0 0.00	206 3.38	150 0.33	50 1.40	1.3 0.02	0.2 0.01	0.1	34		304	44	142	0	DWR
	14S/2E-11D1	7-19-62	66	455	8.2	28 1.36	22 1.75	40 1.75	2.3 0.06	0 0.00	180 2.95	12 0.25	48 1.35	1.8 0.03	0.1 0.01	0.1	36		298	35	152	5	DWR

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b. Gravimetric determination.

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Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as mg/l except as shown

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
						equivalents per million												Silica (SiO ₂)	Boron (B)		Fluoride (F)	Nitrate (NO ₃)	Chloride (Cl)	Sulfate (SO ₄)	Bicarbonate (HCO ₃)	Carbonate (CO ₃)	Potassium (K)	Sodium (Na)	Magnesium (Mg)	Calcium (Ca)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm b	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents
						SALINAS VALLEY (3-4) (Cont.)															
O. Veach domestic	15S/1E-23G1	7-11-62	72	226	7.2	11 0.53	2.9 0.24	32 1.40	1.1 0.03	0 0.00	53 0.86	3.4 0.07	40 1.13	0.0 0.00	0.1 0.01	0.0	0.0	30	132	64	DMR
J. Sino domestic	15S/1E-26N2	7-11-62	67	500	7.5	20 0.99	10 0.85	63 2.75	2.4 0.06	0 0.00	59 0.97	14 0.28	103 2.90	33 0.54	0.1 0.01	0.1	0.1	31	300	59	DMR
domestic and irrigation	15S/2E-1A3	7-10-62	66	450	8.3	49 2.43	10 0.83	28 1.20	3.0 0.08	1.5 0.05	150 2.47	74 1.54	1.3 0.37	0.9 0.01	0.2 0.01	0.1	0.1	28	296	37	DMR
L. Jacks irrigation	15S/2E-2Q1	7-9-62	64	1100	7.9	86 4.31	49 4.03	74 3.20	3.3 0.09	0 0.00	307 5.03	208 4.32	74 2.10	0.0 0.00	0.1 0.01	0.2	0.2	40	744	27	DMR
irrigation	15S/3E-4K3	8-7-62	70	570	8.1	36 1.82	19 1.56	54 2.35	3.7 0.09	0 0.00	122 2.00	133 2.77	38 1.05	0.9 0.01	0.2 0.01	0.2	0.2	28	378	40	DMR
irrigation	15S/3E-5Q4	8-7-62	64	2000	8.0	107 5.35	71 5.79	255 11.10	6.5 0.17	0 0.00	157 2.58	624 12.98	243 6.85	0.0 0.00	0.4 0.02	0.6	0.3	30	1508	50	DMR
E. Giottini domestic and irrigation	15S/3E-7Q1	7-20-62	68	1100	8.0	87 4.37	56 4.64	77 3.33	4.3 0.11	0 0.00	143 2.35	302 6.28	130 3.65	0.0 0.00	0.2 0.01	0.3	0.3	31	650	27	DMR
Spreckles Sugar Co. irrigation	15S/3E-16M1	8-10-62	64	870	8.1	58 2.90	51 4.24	51 2.20	3.9 0.10	0 0.00	189 3.10	209 4.35	66 1.85	1.8 0.02	0.1 0.01	0.2	0.2	26	610	23	DMR
J. Violini irrigation	15S/3E-17P1	8-10-62	66	830	8.5	16 0.81	54 4.43	92 4.00	5.2 0.13	12 0.40	301 4.92	30 0.62	116 3.25	0.0 0.00	0.1 0.01	0.2	0.2	33	494	43	DMR
J. Hugo domestic	16S/2E-11L1	7-25-62	68	600	8.2	29 1.47	13 1.13	70 3.05	2.2 0.06	0 0.00	144 2.36	16 0.34	110 3.10	3.6 0.06	0.4 0.02	0.1	0.1	40	366	53	DMR
Corral de Tierra County Club domestic and irrigation	16S/2E-3J1	7-25-62	68	830	8.5	81 4.08	16 1.34	78 3.40	2.6 0.07	15 0.50	244 4.00	40 0.85	124 3.50	0.0 0.00	0.2 0.01	0.1	0.1	9	474	38	DMR
C. Phillips domestic	16S/2E-12G1	7-25-62	73	1060	8.4	54 2.72	22 1.78	140 6.10	3.3 0.08	0 0.00	152 2.50	34 0.70	254 7.15	6.1 0.10	0.1 0.01	0.1	0.1	44	624	57	DMR
K. R. Nutting irrigation	16S/4E-24A1	7-26-62	66	1350	8.2	89 4.46	62 5.08	122 5.30	3.5 0.09	0 0.00	148 2.43	403 8.41	117 3.30	57 0.92	0.2 0.01	0.4	0.4	36	1044	35	DMR
J. C. Twisselman irrigation	16S/4E-25K1	7-27-62	64	1120	8.2	76 3.84	56 4.55	103 4.47	3.9 0.10	0 0.00	238 3.90	331 6.90	74 2.10	0.0 0.00	0.1 0.01	0.3	0.3	32	810	34	DMR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{1000}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per cent sodium	Hardness as CaCO ₃		Analyzed by c					
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃) ¹	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)			Nitrate (NO ₃)	Fluoride (F)		Boron (B)	Silica (SiO ₂)	Total ppm	N.C. ppm	
						SALINAS VALLEY (3-4) (Cont.)																	
C. Doud irrigation	17S/5E-9Q1	7-31-62	64	610	8.4	75 3.76	28 2.30	30 1.30	2.2 0.06	7.2 0.24	221 3.61	125 2.61	28 0.80	0.0 0.00	0.1 0.01	0.1 0.01	0.1	27	450	18	303	11	DWR
	17S/6E-7Q1	7-31-62	68	620	8.2	40 2.02	21 1.68	58 2.50	2.9 0.07	0 0.00	134 2.20	103 2.14	62 1.75	4.9 0.08	0.1 0.01	0.1 0.01	0.2	36	432	40	185	75	DWR
N. Baker irrigation	17S/6E-27K1	7-31-62	68	1100	8.1	62 3.08	51 4.22	107 4.65	3.1 0.08	0 0.00	149 2.45	337 7.03	94 2.65	5.8 0.09	0.1 0.01	0.1 0.01	0.4	30	816	38	365	243	DWR
L. M. Jacks irrigation	18S/6E-1E1	8-3-62	66	930	7.6	40 2.02	30 2.48	120 5.20	4.2 0.11	0 0.00	207 3.40	222 4.62	50 1.40	33 0.53	0.1 0.01	0.1 0.01	0.5	26	632	53	225	55	DWR
L. Jacks irrigation	18S/6E-2N1	8-3-62	67	1170	7.9	119 5.97	45 3.65	70 3.05	5.6 0.14	0 0.00	119 1.95	365 7.61	87 2.45	57 0.92	0.1 0.01	0.1 0.01	0.1	21	812	24	481	383	DWR
F. W. Smith irrigation	18S/6E-28J1	8-3-62	68	440	8.2	48 2.40	13 1.06	23 1.00	2.4 0.06	0 0.00	180 2.55	69 1.45	13 0.35	3.4 0.06	0.1 0.01	0.1 0.01	0.1	28	300	22	173	46	DWR
E. Pincini irrigation	18S/7E-29G1	8-3-62	66	2400	8.0	263 13.08	115 9.48	149 6.47	4.4 0.11	0 0.00	159 2.60	870 18.13	287 8.10	37 0.60	0.1 0.01	0.1 0.01	0.4	28	2032	22	1128	998	DWR
Salinas Land Co. irrigation	19S/7E-10P1	8-9-62	61	760	8.2	53 2.65	35 2.90	50 2.17	2.0 0.05	0 0.00	146 2.40	99 2.06	108 3.05	11 0.18	0.2 0.01	0.2 0.01	0.3	25	504	28	277	157	DWR
D. M. Bingham domestic and irrigation	19S/7E-13N2	8-8-62	65	1020	8.2	37 1.85	57 4.72	102 4.43	2.7 0.07	0 0.00	176 2.88	283 5.89	64 1.81	37 0.60	0.2 0.01	0.2 0.01	0.6	27	732	40	328	184	DWR
	19S/8E-32A1	8-8-62	64	3500	8.4	281 13.99	70 5.70	500 21.75	8.5 0.22	13 0.44	260 4.26	1335 27.80	316 8.90	24 0.38	0.4 0.02	0.4 0.02	2.0	23	2980	52	985	750	DWR
G. Ross irrigation	19S/8E-33R1	8-8-62	65	2900	8.3	125 6.25	130 10.71	360 15.65	6.7 0.17	3.0 0.10	188 3.08	1057 22.00	279 7.85	25 0.40	0.4 0.02	0.4 0.02	1.8	24	2210	47	848	689	DWR
A. Duarte irrigation	20S/8E-5R1	8-8-62	66	1360	7.9	67 3.34	64 5.25	160 6.95	4.5 0.12	0 0.00	217 3.55	363 7.56	144 4.05	17 0.28	0.2 0.01	0.2 0.01	1.1	31	1096	44	430	253	DWR
irrigation	20S/8E-24J2	8-8-62	70	3200	8.2	164 8.22	63 5.20	445 19.35	11 0.29	0 0.00	122 2.00	492 10.24	754 21.25	2.7 0.04	0.1 0.01	0.1 0.01	2.8	29	2300	58	671	571	DWR
	21S/9E-7J1	8-7-62	77	1700	8.1	137 6.85	80 6.62	132 5.73	5.7 0.15	0 0.00	180 2.95	530 11.04	158 4.45	36 0.58	0.2 0.01	0.2 0.01	0.4	32	1328	30	674	527	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.0 except as shown.

1962

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{0.00}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million								Total dissolved solids in ppm ^b	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c					
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)			Ni-trate (NO ₃)	Fluo-ride (F)		Boron (B)	Silica (SiO ₂)	Other constituents ^d	Total ppm	N.C. ppm
R. Martin irrigation	16S/1E-23F1	7-10-62	65	880	8.0	63 3.14	32 2.59	89 3.83	3.5 0.09	0 0.00	122 2.00	247 5.15	84 2.35	0.0 0.00	0.6 0.03	0.2 0.03	31		670	40	287	187	DWR
						42 2.07	15 1.18	37 1.60	2.8 0.07	0 0.00	137 2.25	80 1.66	30 0.85	0.0 0.00	0.4 0.02	0.1 0.02	18		324	33	162	50	DWR
E. Holt irrigation	16S/1E-25B1	7-9-62	65	460	8.1																		

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ^{ppm} except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)	
Franks Brothers domestic	MD&M 44N/13E-36A1	8-29-62		197	8.0	16 0.79	1.6 0.13	25 1.10	1.7 0.04	0 0.00	106 1.73	1.0 0.02	3.5 0.10	1.0 0.02	0.1 0.01	0.1	28	46	0	USAC
		8-29-62		446	8.4	45 2.24	1.8 1.52	24 1.04	1.3 0.03	4 0.13	230 3.77	7.6 0.16	10 0.28	26 0.42	0.2 0.01	0.06	50	188	0	DWR
R. Jessup domestic	45N/13E-12E1	8-29-62		330	7.7	19 0.96	3.8 0.31	49 2.15	3.7 0.09	0 0.00	187 3.07	8.2 0.17	5.3 0.15	0.0 0.00	0.2 0.15	0.3	41	64	0	USAC
C. Maia domestic	45N/14E-32E1	8-29-62		235	8.2	28 1.42	7.3 0.60	14 0.60	1.3 0.03	0 0.00	153 2.51	1.0 0.02	0.4 0.01	0.0 0.00	0.1 0.01	0.1	42	101	0	USAC
T. M. O'Connor irrigation	47N/13E-7Q1	8-28-62		215	8.2	21 1.03	9.0 0.74	15 0.65	3.6 0.09	0 0.00	141 2.31	1.9 0.04	0.7 0.02	0.0 0.00	0.1 0.01	0.0	50	89	0	USAC
C. R. Vincent domestic and stock	47N/14E-2H1	8-29-62		505	8.2	16 0.08	0.5 0.04	116 5.05	1.6 0.04	0 0.00	148 2.43	49 1.03	57 1.60	1.0 0.02	1.6 0.08	2.9	10	6	0	USAC
L. L. Smith domestic	-14E2	8-29-62		155	7.7	21 1.06	3.8 0.31	6.0 0.25	1.4 0.04	0 0.00	83 1.37	1.4 0.03	0.4 0.01	9.0 0.15	0.2 0.01	0.0	29	69	0	USAC
A. Greenwood domestic and garden	48N/13E-20G1	8-28-62		495	8.5	60 3.00	26 2.11	17 0.75	3.9 0.10	12 0.39	298 4.89	2.4 0.05	7.1 0.20	20 0.32	0.1 0.01	0.1	43	256	0	USAC
C. M. Cloud domestic	48N/14E-35A1	8-29-62	56	191	7.9	23 1.15	6.4 0.53	8.2 0.36	0.4 0.01	0 0.00	102 1.67	6.9 0.14	1.0 0.03	1.3 0.21	0.1 0.00	0.02	33	84	0	DWR
C. M. Cloud irrigation and stock	-35A2	3-21-62	68	740	8.1	4.9 0.24	0.5 0.04	154 6.70	4.9 0.12	0 0.00	237 3.88	28 0.50	88 2.48	1.2 0.02	3.2 0.17	4.4	62	14	0	DWR
		8-29-62	69	734	8.3	6.2 0.31	0.1 0.01	157 6.83	5.1 0.13	0 0.00	216 3.54	43 0.90	96 2.71	4.6 0.07	3.3 0.17	3.0	65	16	0	DWR
D. Flourney domestic	39N/13E-6N1	8-28-62		170	8.0	7.2 0.36	2.3 0.19	30 1.30	4.8 0.12	0 0.00	92 1.62	3.4 0.07	5.3 0.15	1.0 0.02	0.1 0.01	0.1	50	28	0	USAC
Pitt River Ranch domestic	40N/12E-25U1	8-28-62		420	8.4	17 0.83	8.1 0.67	69 3.00	9.5 0.25	8 0.26	243 3.98	12 0.24	14 0.40	1.0 0.02	0.1 0.01	0.2	63	75	0	USAC

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), 2215 Broadway, San Francisco, California 94133.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{100}{\text{ppm}}$ except as shown.

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BIG VALLEY (5.4)

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC).

c. **Terminal Testing Laboratory (T.T.L.), U.S. Agricultural Consultant, (U.S.A.C.) or Pacific Chemical Consultants (P.C.C.),** Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), as indicated.

Terminal Testing Laboratory (T.T.L.), U.S. Agricultural Department, (U.S.A.C.) or its department of Water Resources d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as not except as shown

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{0.0g}$ except as shown

Abstract

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Percent sodium	Hardness as CaCO ₃		Analyzed by c							
						equivalents per million												Total ppm	N.C. ppm								
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Perchlorate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)	Silica (SiO ₂)	Other constituents				
D. Crum irrigation L. Joachim irrigation L. Carpenter domestic R. Clark domestic R. Peters domestic E. Johnson domestic	MDBAM 37N/5E-24F1 37N/6E-61L -19L1 -29B1 38N/3E-24F1 38N/4E-30H1	8-30-62 8-30-62 8-30-62 8-30-62 8-30-62 8-30-62	62 56 255 141 208	185 260 192 255 141 208	8.1 8.2 7.8 8.0 8.0 8.1	4.9 0.70	4.9 0.40	23 1.00	1.6 0.04	0 0.00	115 1.88	1.9 0.04	0.4 0.01	7.0 0.12	0.2 0.01	0.0	33	132	47	55	0	USAC					
						13 1.11	13 1.11	14 0.60	2.6 0.07	0 0.00	180 2.95	1.4 0.03	2.8 0.08	0.0 0.00	0.1 0.01	0.0	45	184	20	115	0	USAC					
						5.6 0.45	12 0.50	3.3 0.08	0 0.00	107 1.75	5.8 0.12	1.1 0.03	14 0.24	0.1 0.01	0.0	41	152	24	76	0	USAC						
						11 0.87	14 0.60	3.7 0.09	0 0.00	137 2.25	7.2 0.15	4.6 0.13	24 0.38	0.2 0.01	0.0	48	204	21	62	0	USAC						
						10 0.60	4.0 0.17	0.7 0.02	0 0.00	98 1.60	0.0 0.00	0.7 0.02	1.0 0.02	0.2 0.01	0.1	22	100	10	71	0	USAC						
						11 0.86	16 0.70	2.9 0.07	0 0.00	122 2.00	0.5 0.01	5.3 0.15	2.0 0.04	0.2 0.01	0.1	42	160	30	79	0	USAC						
						REDDING BASIN (4-6)																					
						Cottonwood Water Department municipal	29N/4W-24L	6-13-62	67	171	8.0	11 0.55	8.1 0.67	12 0.52	0.8 0.02	0 0.00	95 1.56	1.2 0.02	3.2 0.09	3.5 0.06	0.1 0.00	0.06	53	140	30	61	0
D. Park domestic and irrigation	30N/3W-4M1	6-25-62	68	182	7.8	13 0.65	11 0.91	7.5 0.33	1.9 0.05	0 0.00	105 1.72	2.1 0.04	1.6 0.04	1.5 0.02	0.1 0.00	0.04	20	181	17	78	0	DMR					
D. Morton domestic	-34D1	6-13-62	61	261	7.9	21 1.05	16 1.33	2.0 0.39	1.2 0.03	0 0.00	143 2.34	6.6 0.14	3.2 0.09	2.3 0.15	0.0 0.00	0.07	16	183	14	119	2	DMR					
T. Loftus irrigation	30N/4W-1E1	6-25-62	62	151	7.8	11 0.55	6.2 0.51	9.4 0.41	0.5 0.01	0 0.00	64 1.05	7.6 0.16	6.4 0.18	4.3 0.07	0.1 0.00	0.04	38	114	28	53	0	DMR					
Shasta County irrigation	-16R	6-25-62	62	207	7.1	19 0.95	8.6 0.71	11 0.48	1.1 0.03	0 0.00	109 1.79	7.6 0.16	4.7 0.13	1.9 0.03	0.2 0.01	0.02	52	160	22	83	0	DMR					
Paul Bunyon Lumber Company industrial	-25N1	6-13-62	68	169	7.8	16 0.80	5.4 0.44	11 0.48	0.8 0.02	0 0.00	89 1.46	4.9 0.10	2.7 0.08	3.7 0.06	0.2 0.01	0.04	51	140	28	62	0	DMR					
Happy Valley School domestic and irrigation	30N/5W-15R1	6-25-62	69	169	7.8	11 0.55	6.0 0.49	16 0.70	0.8 0.02	0 0.00	92 1.51	7.6 0.16	1.8 0.05	0.3 0.00	0.3 0.02	0.00	46	135	40	52	0	DMR					

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.), U.S. Agriculture Consultants (U.S.A.C.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn) reported here as ppm except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Boron (B)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents
								FEEDING BASIN	(5-6)	(contd.)											
C. Young domestic	30N/5W-17R1	6-25-62	69	147	7.4	10 0.50	3.4 0.23	16 0.70	0.6 0.02	82 1.34	0.3 0.01	3.7 0.10	1.4 0.02	0.1 0.00	0.02	54	130	47	39	0	DWR
R. Gilbert irrigation	31N/3W-7K1	6-25-62	66	233	8.1	15 0.75	7.2 0.59	24 1.04	1.5 0.04	124 2.03	0.8 0.02	12 0.34	0.2 0.00	0.1 0.00	0.28	52	174	43	67	0	DWR
Gamblin domestic and irrigation	-12E1	6-25-62	70	192	7.3	21 1.05	6.4 0.53	8.0 0.35	2.4 0.06	101 1.66	4.2 0.10	3.6 0.10	3.2 0.06	0.1 0.00	0.03	72	172	18	79	0	DWR
T. Murphy irrigation	-29P1	6-25-62	70	196	7.4	17 0.85	8.2 0.73	2.7 0.12	2.0 0.05	110 1.80	1.3 0.03	2.8 0.08	3.7 0.06	0.2 0.01	0.04	76	176	20	79	0	DWR
Lawn Crest Cemetery irrigation	31N/4W-5F1	6-25-62	69	155	7.8	12 0.50	5.8 0.48	12 0.52	1.0 0.02	94 1.54	0.0 0.00	1.8 0.05	0.3 0.00	0.4 0.02	0.04	47	126	32	54	0	DWR
Enterprise School District domestic and irrigation	-7A1	6-25-62	78	219	7.6	24 1.20	5.8 0.48	15 0.05	1.1 0.03	132 2.16	2.0 0.04	2.7 0.06	0.5 0.01	0.6 0.01	0.04	30	146	28	84	0	DWR
P. Templeton domestic and irrigation	-16Q1	6-25-62	62	153	7.9	8.4 0.42	8.8 0.72	10 0.44	0.5 0.01	85 1.39	2.1 0.04	4.1 0.12	2.6 0.04	0.2 0.01	0.04	30	109	28	57	0	DWR
California Motel domestic and irrigation	31N/5W-13D1	6-25-62	74	404	7.4	15 0.75	1.7 0.63	57 2.48	1.4 0.04	143 2.34	0.3 0.01	54 1.92	1.0 0.02	0.3 0.02	0.32	54	261	64	69	0	DWR
U.S. Dept. of Interior domestic and irrigation	-25K1	6-25-62	66	214	7.7	7.3 0.36	2.7 0.22	38 1.65	0.8 0.02	111 1.82	0.2 0.00	15 0.42	0.9 0.01	0.0 0.00	0.06	37	156	73	29	0	DWR
W. Johnson irrigation	32N/3W-17E2	2-27-62	905	905	7.5	8.9 0.44	1.0 0.16	167 7.26	1.2 0.03	78 1.28	35 0.73	211 5.95	2.3 0.04	0.4 0.02		15	485	92	30	0	DWR
		6-25-62	63	3,490	7.1	30 1.90	1.4 0.10	615 26.75	1.4 0.05	145 2.43	1.1 0.04	849 23.66	4.4 0.04	1.4 0.00	14	14	1,730	93	100	0	DWR
B. Irvin domestic and stock	-20P1	6-25-62	74	175	7.2	14 0.70	6.1 0.50	12 0.52	1.2 0.03	78 1.28	0.0 0.00	7.4 0.21	4.0 0.06	0.1 0.00	0.20	25	117	30	60	0	DWR
C. Boyle domestic	-32U2	6-25-62	74	368	8.0	24 1.20	13 1.10	30 1.30	2.1 0.05	162 2.66	0.0 0.00	28 0.79	2.3 0.04	0.1 0.00	0.14	28	246	36	115	0	DWR
V. Phillips irrigation	-32L1	6-25-62	70	1,790	8.1	53 2.44	14 1.16	280 12.18	4.0 0.10	128 2.10	12 0.25	485 13.68	0.9 0.01	0.6 0.03	1.2	42	956	76	191	86	DWR
Goldiron irrigation	-35C1	6-25-62	70	353	8.0	15 0.75	10 0.83	40 1.74	2.3 0.06	126 2.06	1.8 0.04	44 1.24	0.1 0.00	0.6 0.01	0.12	60	236	51	79	0	DWR

Determined by addition of constituents.

a. Gravimetric determination.

b. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.).

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.).

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.05 except as shown

(D.W.R.) as indicated.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonates (CO ₃)	Bicarbonates (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm
Hills and Dale Rest Home Irrigation	MDB&M 32W/4W-14F2	6-25-62	72	113	7.6	8.7 0.13	2.1 0.17	11 0.43	0.6 0.02	0 0.00	50 0.82	4.4 0.09	4.8 0.14	4.9 0.03	0.1 0.00	0.12	23		84	30	0	DMR
						6.9 0.34	2.1 0.42	8.0 0.35	0.2 0.00	0 0.00	16 0.26	0.5 0.01	10 0.28	24 0.55	0.0 0.00	0.14	20		93	38	25	DMR
						4.7 0.23	1.1 0.09	27 4.22	1.3 0.03	0 0.00	160 2.62	0.6 0.01	68 1.92	0.5 0.01	0.3 0.02	1.4	21		291	16	0	DMR
						14 0.70	8.0 0.66	39 1.70	1.1 0.03	0 0.00	132 2.16	0.2 0.00	33 0.93	0.5 0.01	0.1 0.00	0.16	32		193	68	0	DMR
H. Snow, Jr.	32W/5W-26M1	6-14-62	67	268	7.1	20 1.00	8.3 0.68	23 1.00	1.3 0.03	0 0.00	111 1.82	23 0.48	10 0.28	8.8 0.14	0.3 0.02	0.14	27	176	84	0	DMR	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), U.S. Agriculture Consultants (U.S.A.C.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ^{ppm} except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
	<u>MODERAT</u>							<u>LAKE ALVARADO VALLEY 5-7</u>															
Denver Guess Dom.	281/78-511	8-30-62		146	7.8	9.0 0.15	2.0 0.21	7.0 0.30	1.9 0.05	0.0 0.00	51 0.33	0.0 0.00	4.0 0.10	0.0 0.00	0.2 0.01	0.2 0.01	0.0	29	30	33	USAC		
Denver Guess Dom.	-511	8-30-62		102	7.8	9.0 0.47	2.0 0.19	6.0 0.26	1.8 0.05	0.0 0.00	54 0.38	0.0 0.00	0.0 0.00	0.0 0.00	0.2 0.01	0.2 0.01	0.1	34	27	33	USAC		
William Greaser Dom.	-7A1	8-30-62		116	7.2	10 0.43	3.0 0.26	6.0 0.25	1.9 0.05	0.0 0.00	58 0.35	0.0 0.00	0.0 0.00	0.0 0.00	0.1 0.00	0.1 0.00	0.0	32	24	37	USAC		
Sam Herrell Dom.	-7H1	8-30-62		172	8.1	19 0.93	6.0 0.43	5.5 0.24	2.9 0.07	0.0 0.00	98 1.59	0.0 0.00	3.0 0.08	0.0 0.00	0.2 0.01	0.2 0.01	0.0	29	14	71	USAC		
H. E. Rogers Dom.	-18B1	8-29-62		800	7.4	120 6.04	35 2.94	9.3 0.40	7.0 0.18	0.0 0.00	558 9.15	0.0 0.00	7.0 0.20	0.0 0.00	0.1 0.00	0.1 0.00	0.1	29	42	449	USAC		
J. W. Stone Dom.	-1801	8-29-62		89	7.5	9.0 0.44	1.0 0.08	2.2 0.10	1.6 0.04	0.0 0.00	41 0.66	0.0 0.00	1.0 0.02	0.0 0.00	0.2 0.01	0.2 0.01	0.0	25	15	26	USAC		
State of California Dom.	-1841	8-29-62		57	7.6	7.0 0.35	1.0 0.08	2.2 0.10	1.3 0.03	0.0 0.00	32 0.53	0.0 0.00	0.0 0.00	0.0 0.00	2.2 0.04	0.2 0.01	0.0	21	18	22	USAC		
	<u>MODERAT</u>																						
Carl Evans Dom.	241/178-481	8-29-62		175	8.1	7.0 0.35	9.0 0.77	5.1 0.50	0.1 0.00	0.0 0.00	113 1.85	0.0 0.00	0.0 0.00	0.0 0.00	0.1 0.00	0.1 0.00	0.0	22	47	51	USAC		
C. D. Doyle Dom.	-11	8-29-62		160	8.1	28 1.35	11 0.85	5.2 2.25	0.6 0.02	0.0 0.00	122 2.00	4.0 0.09	78 2.20	2.3 0.04	0.4 0.02	0.4 0.02	0.8	20	50	112	USAC		
Toscani Bros. Dom.	-11P1	8-29-62		500	8.2	33 1.66	17 1.35	4.6 2.00	0.3 0.01	0.0 0.00	207 3.40	27 0.57	34 0.95	0.4 0.01	0.2 0.01	0.2 0.01	0.2	26	40	151	USAC		
State of California Dom.	-1811	8-29-62		250	8.3	22 1.09	13 1.07	12 0.50	0.1 0.00	1.5 0.05	146 2.40	4.0 0.09	0.0 0.00	0.0 0.00	0.2 0.01	0.2 0.01	0.0	20	19	108	USAC		
C. Bainbridge Dom.	-23A1	8-29-62		205	7.9	26 1.32	5.0 0.42	5.0 0.20	0.9 0.03	0.0 0.00	105 1.72	8.0 0.16	0.0 0.00	0.0 0.00	0.2 0.01	0.2 0.01	0.0	10	10	87	USAC		
John Young Dom.	-27R1	8-29-62		136	7.9	12 0.61	4.0 0.27	8.3 0.36	2.3 0.06	0.0 0.00	65 1.05	2.0 0.05	0.0 0.00	2.1 0.04	0.2 0.01	0.2 0.01	0.0	15	28	44	USAC		
Curry Johnson Dom.	-2811	8-29-62		172	8.1	14 0.71	7.0 0.59	8.9 0.39	0.2 0.01	0.0 0.00	97 1.59	1.0 0.03	0.0 0.00	0.0 0.00	0.2 0.01	0.2 0.01	0.0	25	23	65	USAC		
Dom.	-3071	8-29-62	53	200	8.2	22 1.09	6.0 0.46	10 0.43	0.5 0.02	0.0 0.00	114 1.87	2.0 0.05	0.0 0.00	0.0 0.00	0.2 0.01	0.2 0.01	0.0	25	22	78	USAC		

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as indicated, except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent solids in ppm	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Total ppm		N.C. ppm	
Plumas County Dom.	27N/9E-35P1	8-29-62		233	8.2	26 1.28	11 0.86	8.8 0.38	2.2 0.06	0.0 0.00	14.6 2.40	3.0 0.07	0.0 0.00	0.0 0.00	0.2 0.01	0.0	28	157	15	129	9	USAC
	MD&M																					
	24N/9E-2A1	8-28-62		200	8.1	12 0.59	11 0.87	12 0.50	1.1 0.03	0.0 0.00	11.8 1.94	0.0 0.00	0.0 0.00	0.0 0.00	0.2 0.01	0.0	20	114	25	73	0	USAC
	Grey's Flower Gardens Dom.	-10H1	8-28-62		180	8.1	28 1.42	2.0 0.21	3.9 0.17	0.3 0.01	103 1.69	1.0 0.02	0.0 0.00	0.0 0.00	0.2 0.01	0.0	12	98	9	82	0	USAC
	Bruno Riedl Dom.	-10L1	8-28-62		63	7.2	7.0 0.35	0.0 0.00	1.1 0.05	0.0 0.00	20 0.34	0.0 0.00	0.0 0.00	0.0 0.00	0.2 0.01	0.0	6	24	13	18	1	USAC
	D. E. Bellamy Dom.	-16H1	8-28-62		75	7.4	8.0 0.42	1.0 0.14	3.3 0.15	0.3 0.01	0.0 0.00	37 0.60	1.0 0.01	0.0 0.00	0.2 0.01	0.0	8	41	21	28	0	USAC
	R. W. Asplund Dom.	24N/10E-6H1	8-28-62		410	8.3	55 2.73	8.0 0.66	23 1.00	0.7 0.02	4.5 0.15	24.4 4.00	0.0 0.00	4.0 0.10	0.2 0.01	0.0	16	232	23	170	0	USAC
	B. D. McRoberts Dom.	-8L1	8-28-62		340	8.3	41 2.04	13 1.14	8.3 0.37	0.7 0.02	3.0 0.10	195 3.20	6.0 0.13	0.0 0.00	0.2 0.01	0.0	19	187	10	159	0	USAC
	M. A. Haney Dom.	-18D1	8-28-62		114	7.4	13 0.63	4.0 0.31	2.8 0.14	0.4 0.01	0.0 0.00	56 0.92	1.0 0.03	0.0 0.00	0.1 0.00	0.0	10	60	13	47	1	USAC
	E. Marquardt Dom.	-19B1	8-28-62		115	7.2	13 0.65	4.0 0.32	2.3 0.11	0.5 0.02	0.0 0.00	60 0.99	2.0 0.05	0.0 0.00	0.2 0.01	0.0	8	61	10	49	0	USAC
State of California Dom.	-19D1	8-28-62		130	7.6	12 0.58	5.0 0.44	3.3 0.15	0.4 0.01	0.0 0.00	66 1.08	1.0 0.02	0.0 0.00	0.2 0.01	0.0	6	60	13	51	0	USAC	
	Ben Williams Dom.	-20D1	8-28-62		59	7.2	5.0 0.26	2.0 0.17	2.2 0.10	0.3 0.01	0.0 0.00	24 0.40	0.0 0.00	0.0 0.00	0.2 0.01	0.0	7	32	19	22	2	USAC
	MD&M																					
Robert Schoensee Dom.	22N/12E-9G1	8-22-62		275	8.0	17 0.85	14 1.15	16 0.70	4.2 0.11	0.0 0.00	11.9 1.95	3.4 0.07	0.0 0.00	0.6 0.03	0.0	41	198	25	100	2	USAC	
LeRoy Pryor Dom.	-22C1	8-22-62	55	106	7.8	9.2 0.46	3.5 0.29	3.3 0.15	0.6 0.02	0.0 0.00	54 0.88	1.4 0.03	0.0 0.00	0.2 0.01	0.0	16	61	16	38	0	USAC	

a. Determined by addition of constituents.

b. G. W. Williams.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch, (U.S.G.S.), Pacific Chemical Constituents (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 9.0 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)	Silica (SiO ₂)		Total ppm	N.C. ppm	
Sherrad Dom.	22N/13E-19N1	8-22-62	250	7.2	8.1	23	7.1	15	3.4	136	7.2	0.0	0.0	0.01	0.0	36	159	26	88	USAC
						1.17	0.98	0.65	0.09	2.24	0.15	0.00	0.00	0.00	0.00	0.0	254	56	77	USAC
W. A. Barks Dom.	-30R1	8-22-62	365	7.3	8.1	15	9.5	47	2.6	104	67	18	0.0	0.1	0.4	44				
						0.75	0.78	2.05	0.07	1.70	1.41	0.50	0.00	0.00						
Rita Bradley Dom.	20N/14E-4G2	8-21-62	195	8.1	8.1	16	7.8	14	3.5	124	1.0	0.0	0.0	0.1	0.0	27	131	29	72	USAC
						0.80	0.84	0.60	0.09	2.04	0.02	0.00	0.00	0.00	0.00	0.1	271	68	56	USAC
Gordon McMillen Dom.	21N/14E-15J1	8-21-62	380	8.1	8.1	12	6.2	60	4.3	127	1.0	43	32	1.0	0.1	50	443	58	145	USAC
						0.70	0.51	2.60	0.11	2.08	0.02	1.20	0.52	0.05	0.7	35				
Gordon Van Vleet Dom.	-22L1	8-21-62	760	7.4	8.1	26	19	100	9.5	176	23	139	3.8	0.2	0.7	35	146	16	101	USAC
						1.31	1.58	4.35	0.25	2.89	0.19	0.00	0.06	0.01	0.0	31				
John Berutti Dom.	-29J1	8-21-62	235	7.6	8.1	17	14	8.9	0.6	151	0.0	0.0	0.0	0.1	0.0	40	144	25	79	USAC
						0.85	1.17	0.38	0.02	2.43	0.00	0.00	0.00	0.00	0.0	1.0				
P. A. Torri Dom.	-36K1	8-21-62	210	8.0	8.1	15	10	13	1.8	122	1.0	2.8	0.0	0.1	0.0	40	917	93	42	USAC
						0.77	0.81	0.55	0.05	2.00	0.02	0.08	0.00	0.00	5.2	71				
Eminia Filipini Dom.	21N/15E-5D1	8-22-62	1450	7.0	8.1	10	3.6	300	6.5	143	167	273	14	1.0	0.1	47	177	53	51	USAC
						0.53	0.30	13.05	0.17	2.35	3.49	7.70	0.24	0.05	0.1	36				
John Dandrea Dom. & Stock	-9Q3	8-21-62	245	7.9	8.1	12	4.9	30	5.8	124	11	1.8	2.6	0.1	0.1	47	116	21	64	USAC
						0.61	0.40	1.30	0.15	2.04	0.22	0.05	0.00	0.00	0.0	65				
Mrs. Hovey Dom. & Stock	22W/14E-14F	8-22-62	168	8.1	8.1	15	6.3	8.3	1.3	98	1.4	0.0	0.0	0.1	0.0	36	372	87	30	USAC
						0.76	0.52	0.35	0.03	1.60	0.03	0.00	0.00	0.00	1.1	65				
Josephine Roberti Dom. & Stock	22W/15E-11F1	8-21-62	530	8.1	8.1	5.2	4.1	111	5.6	247	3.4	31	24	0.8	0.2	62	136	62	27	USAC
						0.26	0.34	4.83	0.14	4.05	0.07	0.88	0.38	0.04	0.2	62				
Huntly Bros. Dom. & Stock	-12B1	8-21-62	180	7.3	8.1	4.4	3.9	26	5.7	68	0.0	0.0	0.0	0.8	0.2	62	274	90	17	USAC
						0.22	0.32	1.13	0.15	1.11	0.00	0.00	0.00	0.00	1.0	62				
P. R. Scolari Dom. & Stock	-17C3	8-21-62	350	7.5	8.1	5.0	1.0	76	2.1	139	12	18	28	0.6	1.0	62	729	70	177	USAC
						0.25	0.08	3.30	0.05	2.29	0.25	0.50	0.45	0.03	0.2	30				
Lucky Hereford Ranch Dom. & Stock	-26K2	8-21-62	1100	7.9	8.1	16	33	195	1.3	311	197	96	7.7	0.1	0.2	80	1659	90	111	USAC
						0.79	2.74	8.47	0.03	5.10	4.11	2.70	0.14	0.00	9.1	80				
Eminia Filipini Stock	-32F1	8-22-62	2650	8.4	8.1	40	2.4	525	14	7.2	367	571	0.0	2.0	9.1	80				
						2.02	0.20	22.83	0.37	0.81	7.55	16.10	0.00	0.10						

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (DWR) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{1000}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Total ppm	N.C. ppm		
C. D. Franchini Stock	MDB&M 22N/16E-5W2	8-21-62	77	200	7.2	4.4	2.4	32	4.2	0.0	118	1.4	0.0	0.0	0.6	0.1	56	160	72	21	0	USAC		
						0.22	0.20	1.40	0.11	0.00	1.93	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						2.30	1.47	0.87	0.01	0.00	2.40	0.08	0.50	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1.08	0.26	5.10	0.02	0.00	1.48	2.39	3.39	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1.80	0.77	0.55	0.09	0.00	2.90	0.06	0.03	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Herveno Air Service Dom.	23N/14E-25G1	8-21-62	66	770	8.0	22	3.0	140	0.8	0.0	90	11.4	121	1.9	0.2	1.5	16	464	82	67	0	USAC		
						1.08	0.26	5.10	0.02	0.00	1.48	2.39	3.39	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						2.30	1.47	0.87	0.01	0.00	2.40	0.08	0.50	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1.08	0.26	5.10	0.02	0.00	1.48	2.39	3.39	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1.80	0.77	0.55	0.09	0.00	2.90	0.06	0.03	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Albert Franchi Dom. & Stock	-35L1	8-21-62	66	770	8.0	22	3.0	140	0.8	0.0	90	11.4	121	1.9	0.2	1.5	16	464	82	67	0	USAC		
						1.08	0.26	5.10	0.02	0.00	1.48	2.39	3.39	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						2.30	1.47	0.87	0.01	0.00	2.40	0.08	0.50	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1.08	0.26	5.10	0.02	0.00	1.48	2.39	3.39	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1.80	0.77	0.55	0.09	0.00	2.90	0.06	0.03	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lyle Benner Dom.	23N/15E-28H4	8-21-62	300	300	7.7	36	9.4	13	3.6	0.0	177	2.9	1.1	11	0.1	0.0	44	208	17	128	0	USAC		
						1.80	0.77	0.55	0.09	0.00	2.90	0.06	0.03	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						2.30	1.47	0.87	0.01	0.00	2.40	0.08	0.50	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1.08	0.26	5.10	0.02	0.00	1.48	2.39	3.39	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1.80	0.77	0.55	0.09	0.00	2.90	0.06	0.03	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Plumas County Stock	-35C1	8-21-62	78	365	7.8	6.0	4.3	55	5.7	0.0	77	1.0	44	32	1.0	1.1	33	245	75	33	0	USAC		
						0.30	0.35	2.40	0.15	0.00	1.26	0.02	1.23	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						2.30	1.47	0.87	0.01	0.00	2.40	0.08	0.50	0.94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1.08	0.26	5.10	0.02	0.00	1.48	2.39	3.39	0.04	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						1.80	0.77	0.55	0.09	0.00	2.90	0.06	0.03	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Overington Dom.	MDB&M 14N/9W-6P2	6-12-62	39	39	6.4	1.1	2.3	2.2	0.7	0.0	22	0.0	0.5	0.4	0.0	0.00	10	28	28	12	0	DWR		
						0.05	0.19	0.10	0.02	0.00	0.36	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						0.85	0.69	0.30	0.7	0.0	93	2.5	4.2	1.8	0.2	0.01	14	109	16	77	1	DWR	DWR	
						1.05	1.39	1.5	0.8	0.0	181	4.1	2.9	0.2	0.01	0.01	37	187	21	122	0	DWR	DWR	
						1.10	2.84	1.3	0.7	0.0	256	8.9	3.9	2.0	0.3	0.02	36	247	12	197	0	DWR	DWR	
L. J. Skaggs Irr.	-7B	6-12-62	296	413	8.1	21	17	15	0.8	0.0	181	4.1	2.9	0.2	0.01	0.01	37	187	21	122	0	DWR		
						1.05	1.39	1.5	0.8	0.0	181	4.1	2.9	0.2	0.01	0.01	37	187	21	122	0	DWR	DWR	
						1.10	2.84	1.3	0.7	0.0	256	8.9	3.9	2.0	0.3	0.02	36	247	12	197	0	DWR	DWR	
						1.10	2.84	1.3	0.7	0.0	256	8.9	3.9	2.0	0.3	0.02	36	247	12	197	0	DWR	DWR	
						1.10	2.84	1.3	0.7	0.0	256	8.9	3.9	2.0	0.3	0.02	36	247	12	197	0	DWR	DWR	
Upper Lake Cemetery Dist.- Irr.	-17P1	6-12-62	413	413	7.5	22	34	13	0.7	0.0	256	8.9	3.9	2.0	0.3	0.02	36	247	12	197	0	DWR		
						1.10	2.84	1.3	0.7	0.0	256	8.9	3.9	2.0	0.3	0.02	36	247	12	197	0	DWR	DWR	
						1.10	2.84	1.3	0.7	0.0	256	8.9	3.9	2.0	0.3	0.02	36	247	12	197	0	DWR	DWR	
						1.10	2.84	1.3	0.7	0.0	256	8.9	3.9	2.0	0.3	0.02	36	247	12	197	0	DWR	DWR	
						1.10	2.84	1.3	0.7	0.0	256	8.9	3.9	2.0	0.3	0.02	36	247	12	197	0	DWR	DWR	
Guy Bowers Dom.	-31P1	6-12-62	167	167	6.8	7.1	9.1	12	1.4	0.0	90	4.4	4.2	0.6	0.1	0.00	25	108	31	55	0	DWR		
						0.35	0.75	0.52	0.04	0.00	1.48	0.09	0.12	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						40	1.84	8.6	0.2	0.0	218	15	7.4	6.6	0.2	0.01	20	222	9	192	13	DWR	DWR	
						2.00	3.07	0.37	0.00	0.00	3.57	0.31	0.21	0.11	0.01	0.01	59	1190	89	105	0	DWR	DWR	
						85	4.24	4.5	3.3	4.0	358	114	32	0.9	0.01	0.01	4	118	14	89	0	DWR	DWR	
Ernie Vehand Dom.	15N/10W-3C1	6-12-62	389	389	8.2	40	22	8.6	0.2	0.0	218	15	7.4	6.6	0.2	0.01	20	222	9	192	13	DWR		
						2.00	3.07	0.37	0.00	0.00	3.57	0.31	0.21	0.11	0.01	0.01	59	1190	89	105	0	DWR	DWR	
						85	4.24	4.5	3.3	4.0	358	114	32	0.9	0.01	0.01	4	118	14	89	0	DWR	DWR	
						2.00	3.07	0.37	0.00	0.00	3.57	0.31	0.21	0.11	0.01	0.01	59	1190	89	105	0	DWR	DWR	
						85	4.24	4.5	3.3	4.0	358	114	32	0.9	0.01	0.01	4	118	14	89	0	DWR	DWR	
Erwin Lewis Dom. & Stock	-371	6-12-62	819	819	8.4	85	37	45	3.3	0.0	358	114	32	0.9	0.01	20	518	21	366	65	DWR			
						4.24	3.07	1.96	0.08	0.13	5.87	2.37	0.90	0.01	0.01	59	1190	89	105	0	DWR	DWR		
						2.00	3.07	0.37	0.00	0.00	3.57	0.31	0.21	0.11	0.01	0.01	59	1190	89	105	0	DWR	DWR	
						85	4.24	4.5	3.3	4.0	358	114	32	0.9	0.01	0.01	4	118	14	89	0	DWR	DWR	
						2.00	3.07	0.37	0.00	0.00	3.57	0.31	0.21	0.11	0.01	0.01	59	1190	89	105	0	DWR	DWR	
Leo Pecinovsky Dom.	-10E1	6-12-62	2140	2140	8.2	29	7.9	404	2.3	0.0	293	0.0	537	0.4	0.0	0.00	4	1190	89	105	0	DWR		
						1.45	0.65	17.57	2.3	0.0	293	0.0	537	0.4	0.0	0.00	4	1190	89	105	0	DWR	DWR	
						1.45	0.65	17.57	2.3	0.0	293	0.0	537	0.4	0.0	0.00	4	1190	89	105	0	DWR	DWR	
						1.45	0.65	17.57	2.3	0.0	293	0.0	537	0.4	0.0	0.00	4	1190	89	105	0	DWR	DWR	
						1.45	0.65	17.57	2.3	0.0	293	0.0	537	0.4	0.0	0.00	4	1190	89	105	0	DWR	DWR	
Bessie Dunton Dom.	-12K2	6-12-62	198	198	7.8	18	11	7.0	0.6	0.0	112	9.7	2.9	0.1	0.1	0.01	14	118	14	89	0	DWR		
						0.90	0.88	6.30	0.02	0.00	1.84	0.20	0.08	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						0.90	0.88	6.30	0.02	0.00	1.84	0.20	0.08	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						0.90	0.88	6.30	0.02	0.00	1.84	0.20	0.08	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						0.90	0.88	6.30	0.02	0.00	1.84	0.20	0.08	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lake Co. Cannery Inc. Ind.	-13A1	6-12-62	66	213	7.9	10	16	12	0.6	0.0	133	0.0	2.8	1.6	0.3	0.02	61	170	22	89	0	DWR		
						0.50	1.28	0.52	0.02	0.00	2.18	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						0.50	1.28	0.52	0.02	0.00	2.18	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						0.50	1.28	0.52	0.02	0.00	2.18	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
						0.50	1.28	0.52	0.02	0.00	2.18	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Claude Davis Dom.	-13A1	6-12-62	66	213	7.9	10	16	12	0.6	0.0	133	0.0												

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as mg/l except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by					
						equivalents per million												Baron (B)	Silico (SiO ₂)		Other constituents				
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-le (NO ₃)	Fluo-ride (F)										
Herbert Jarvis Irr. Antone Santos Dom.	MDB&N -24H1 16N/9W-31L3	6-12-62	68	398	8.4	24	22	30	0.3	2.0	210	13	17	0.9	0.4	0.12	32	245	30	152	0	DWR			
						1.20	1.84	1.30	0.01	0.07	3.44	0.27	0.18	0.01	0.02										
						22	6.8	9.2	1.2	0.0	117	4.4	2.8	0.2	0.2	0.00	5.9		111	19	83	0	DWR		
						1.10	0.56	0.40	0.03	0.00	1.92	0.09	0.08	0.00	0.01										
C. Benson Irr. C. W. Butler Irr. Davidson Irr.	MDB&N 13N/9W-30L1 -60L1 -80L1	6-13-62	59	351	7.8	16	32	6.2	1.0	0.0	200	9.4	4.3	7.0	0.2	0.14	33	207	7	173	9	DWR			
						0.80	2.06	0.27	0.02	0.00	3.28	0.20	0.12	0.01											
						50	93	31	0.8	0.0	589	16	28	10	0.4	0.18	42		592	12	507	24	DWR		
						2.50	7.63	1.35	0.02	0.00	9.65	0.96	0.79	0.16	0.02										
						41	42	11	0.7	1	294	22	7.5	22	0.1	0.35	24		317	8	274	30	DWR		
H. E. Marschell Dom. H. E. Marschell Irr. Lincoln Wright Irr.	-8N1 -8N2 -12N1	6-13-62	63	678	8.1	19	60	31	3.9	0.0	394	0.2	20	36	0.2	2.7	74	447	18	311	0	DWR			
						0.95	1.23	0.44	0.02	0.00	2.26	0.12	0.19	0.01	0.01										
						25	496	1.35	0.10	0.00	6.46	0.00	0.56	0.58	0.01										
						1.25	4.96	1.35	0.10	0.00	6.46	0.00	0.56	0.58	0.01										
						16	42	14	4.7	4	269	0.0	17	0.9	0.2	0.57	74		305	12	214	0	DWR		
Merritt Fraser Irr. Merritt Fraser Dom. W. J. Stone Irr.	-160L1 -160L2 -22J1	6-13-62	949	432	7.5	33	104	21	2.8	0.0	652	0.0	9.6	14	0.2	0.69	82	587	8	512	0	DWR			
						1.65	8.38	0.91	0.07	0.00	10.69	0.00	0.27	0.22	0.01										
						32	8.38	0.91	0.07	0.00	10.69	0.00	0.27	0.22	0.01										
						1.60	2.43	0.43	0.02	0.00	3.33	0.53	0.26	0.29	0.01										
						17	62	9.6	1.4	0.0	329	13	12	9.0	0.1	0.07	53		339	7	296	26	DWR		
I. Morrison Dom. I. Morrison Irr.	14N/9W-32J1 -32J2	6-12-62	64	778	8.4	56	70	16	0.7	5	488	13	18	13	0.4	0.22	56	488	8	428	28	DWR			
						2.79	5.76	0.70	0.02	0.17	8.00	0.27	0.51	0.21	0.02										
						35	47	12	1.1	0.0	344	12	8.2	1.9	0.3	0.10	66		353	8	282	0	DWR		
						1.75	3.88	0.52	0.03	0.00	5.64	0.25	0.23	0.03	0.02										

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{100}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents
						SACRAMENTO VALLEY (4-21.00) TEHAMA COUNTY (5-31.01)															
Kelsey irrigation	23W/2W-5A	6-14-62	68	322	8.3	19 0.95	16 1.31	27 1.17	1.1 0.03	0	191 3.13	5.2 0.12	5.7 0.16	3.6 0.06	0.2 0.01	0.06	22	34	113	0	DWR
A. Angleton irrigation	23W/3W-22Q	6-14-62	70	378	7.6	32 1.60	16 1.28	21 0.91	0.9 0.02	0	177 2.90	14 0.29	22 0.62	2.1 0.03	0.2 0.01	0.22	28	24	144	0	DWR
D. Smith domestic and stock	-35E1	6-14-62	68	204	8.0	15 0.75	8.1 0.67	14 0.61	0.6 0.02	0	80 1.31	6.6 0.14	16 0.45	5.8 0.09	0.1 0.00	0.15	27	30	71	5	DWR
J. Ayres domestic and irrigation	24W/2W-30C1	6-14-62	66	425	8.2	28 1.40	24 1.94	26 1.13	1.0 0.02	0	228 3.74	8.2 0.17	15 0.42	5.2 0.06	0.2 0.01	0.06	26	25	167	0	DWR
G. Saulsberry domestic and irrigation	24W/3W-3P1	6-14-62	65	335	8.2	24 1.70	15 1.26	10 0.44	0.7 0.02	0	156 2.56	20 0.42	7.2 0.20	12 0.19	0.1 0.00	0.05	26	13	148	20	DWR
H. Moran and Son irrigation	-4K1	6-14-62	66	320	8.4	32 1.60	17 1.38	8.8 0.38	0.9 0.02	2	154 2.52	18 0.37	6.2 0.17	13 0.21	0.2 0.01	0.08	27	11	149	19	DWR
Corning High School domestic	-14M1	6-15-62	68	238	8.1	23 1.15	11 0.89	13 0.56	0.8 0.02	0	137 2.24	3.6 0.07	4.3 0.12	6.4 0.10	0.2 0.01	0.08	30	21	102	0	DWR
W. Turner irrigation	-20W1	6-14-62	66	152	8.0	8.7 0.43	7.2 0.59	13 0.56	0.5 0.01	0	74 1.21	5.0 0.21	3.0 0.08	6.8 0.11	0.3 0.02	0.07	32	35	51	0	DWR
A. Miller domestic	24W/5W-21L1	6-14-62	68	328	8.4	25 1.25	10 0.85	32 1.39	1.2 0.03	1	165 2.70	9.2 0.21	19 0.54	0.4 0.01	0.2 0.01	0.02	30	39	105	0	DWR
S. Pritchett domestic	25W/1W-3M1	6-15-62		391	8.4	33 1.65	25 2.03	14 0.61	3.3 0.08	4	236 3.87	2.3 0.05	7.0 0.20	3.4 0.05	0.1 0.00	0.11	73	14	184	0	DWR
Los Molinos Cemetery domestic	25W/2W-4M1	6-15-62	66	256	8.1	21 1.05	12 0.99	11 0.48	2.9 0.07	0	105 1.72	16 0.33	16 0.45	4.1 0.07	0.1 0.00	0.32	62	18	102	16	DWR
F. Wray domestic	-7K1	7-5-62	64	549	7.3	40 2.00	36 2.92	19 0.83	1.1 0.03	0	259 4.24	20 0.42	24 0.96	6.6 0.11	0.2 0.01	0.08	30	14	246	34	DWR
E. Clements Horst Co. irrigation	-21Q1	6-15-62	76	379	7.4	2.3 0.11	1.6 0.13	77 3.35	4.0 0.10	0	157 2.57	15 0.31	26 0.73	0.6 0.01	0.5 0.03	0.21	60	91	12	0	DWR
El Camino Irrigation District irrigation	25W/3W-3M1	6-15-62	68	380	8.5	26 1.30	23 1.90	20 0.87	1.4 0.04	6	193 3.16	7.7 0.16	19 0.54	3.1 0.05	0.1 0.00	0.09	41	21	160	0	DWR

a. Determined by addition of constituents.

b. Analyzed by Pacific Chemical Consultants (P.C.C.).

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), U.S. Agriculture Department (U.S.A.D.), U.S. Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown

1962

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), 1000 North 4th Street, Portland, Ore. 97208. (U.S.G.S.) or State Department of Water Resources (D.M.R.) as indicated.
d. Termol Testing Laboratory (T.T.L.), 3330 North 10th Street, Portland, Ore. 97208. (T.T.L.)
e. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as concentrations as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c	
						equivalent per million												Total ppm	N.C. ppm		
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Sul-fate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluo-ride (F)	Boron (B)						Silico (SiO ₂)
GREEN COUNTY (5421.02) (cont'd.)																					
A. Walton domestic	19N/2W-6G1	7-11-62	70	290	7.9	37 1.87	16 1.31	13 0.55	0.4 0.00	212 3.48	6.7 0.14	5.3 0.15	0.1 0.01	0.1 0.01	0.1 0.01	24	190	15	159	0	USAC
C. Calvert domestic	-23N1	7-11-62	68	400	8.2	29 1.47	29 2.35	32 1.40	0.4 0.00	313 5.13	3.8 0.08	3.5 0.10	0.1 0.01	0.1 0.01	0.1 0.01	23	256	27	191	0	USAC
Alta California Dairy domestic and industrial	19N/3W-5Y1	7-11-62	70	450	8.2	33 1.65	22 1.75	53 2.30	1.0 0.03	301 4.93	29 0.61	8.2 0.23	5.3 0.08	0.4 0.02	0.2	22	312	40	170	0	USAC
Caccon Brothers domestic	-18P1	7-11-62	70	500	8.1	41 2.06	22 1.79	27 2.47	1.2 0.03	298 4.88	45 0.94	24 0.68	0.4 0.00	0.4 0.02	0.2	15	338	39	193	0	USAC
A. Quinn domestic	20N/2W-11Q1	7-10-62	68	320	8.2	37 1.84	18 1.43	18 0.80	0.5 0.01	229 3.75	6.7 0.14	8.9 0.25	0.1 0.01	0.1 0.01	0.1	20	216	19	166	0	USAC
H. Perry domestic	-13Q1	7-10-62	68	390	8.2	46 2.32	24 2.00	19 0.83	0.3 0.01	302 4.95	5.3 0.11	6.4 0.18	0.1 0.01	0.1 0.01	0.1	23	264	16	216	0	USAC
F. Reiman irrigation	20N/3W-2D1	7-10-62	64	370	8.2	46 2.30	19 1.57	18 0.80	0.7 0.02	237 3.88	16 0.34	21 0.60	0.0 0.00	0.1 0.01	0.1	12	246	17	194	0	USAC
L. Berens domestic	20N/4W-2Q1	7-10-62	74	280	8.1	32 1.58	16 1.33	14 0.60	0.3 0.01	183 3.00	3.8 0.08	3.5 0.10	0.1 0.01	0.1	0.0	26	198	17	146	0	USAC
J. Tothomas irrigation	21N/2W-2D1	7-10-62	68	480	8.2	70 3.50	19 1.55	35 1.50	0.9 0.02	322 5.28	17 0.37	23 0.65	0.1 0.01	0.2	0.2	16	326	23	253	0	USAC
I. Finch irrigation	-15C1	7-10-62	68	380	7.8	45 2.25	13 1.06	22 0.95	0.9 0.02	198 3.25	8.6 0.18	22 0.63	0.0 0.00	0.1 0.01	0.1	21	220	22	166	3	USAC
Hamilton domestic	21N/3W-2Q1	7-10-62	70	450	8.0	60 2.98	20 1.68	23 1.00	0.8 0.02	270 4.43	17 0.37	25 0.70	0.1 0.01	0.1	0.1	19	320	18	233	11	USAC
B. Purvance irrigation	-14F1	7-10-62	74	530	8.2	17 0.87	9.1 0.75	103 4.47	0.7 0.02	222 3.63	0.0 0.00	92 0.00	0.0 0.01	0.1	0.2	18	346	73	81	0	USAC
E. Slatin irrigation	-20D1	7-10-62	71	310	8.0	26 1.28	13 1.10	30 1.30	0.6 0.02	171 2.80	7.2 0.15	27 0.75	0.1 0.01	0.2	0.2	12	198	35	119	0	USAC
Baker and McGowan irrigation	22N/1W-29Q1	7-9-62	70	455	8.3	46 2.28	22 1.84	23 1.00	0.8 0.02	3.3 0.11	206 3.38	27 0.76	0.1 0.01	0.1	0.12	18	276	19	206	31	USAC

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), U.S.A.C., U.S. Agricultural Consultants (U.S.A.C.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as mg/l except as shown.

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids found in ppm	Per- cent solid sum	Hardness as CaCO ₃		Analyzed by c
						Calcium (Ca)	Magne- sium (Mg)	Sodium (Na)	Potas- sium (K)	Carbon- ate (CO ₃)	Bicar- bonate (HCO ₃)	Sul- fate (SO ₄)	Chlo- ride (Cl)	Ni- trate (NO ₃)	Fluo- ride (F)			Boron (B)	Silica (SiO ₂)	
						CLENN COUNTY (5-21-02) (cont'd.)														
C. Mickel domestic	22N/2W-3A1	7-9-62	70	522	8.2	46	24	29	0.6	0	189	36	37	33	0.1	0.1	23	316	59	USAC
						2.31	1.97	1.26	0.02	0.00	3.10	0.74	1.05	0.34	0.01	0.1	20			
Mills Orchard Inc. irrigation	-26B1	7-9-62	67	378	8.2	34	16	21	0.7	0	153	27	22	7.7	0.1	0.1	23	214	24	USAC
						1.68	1.32	0.90	0.02	0.00	2.52	0.57	0.62	0.12	0.01	0.2	15			
I. C. Wright domestic	22N/3W-4G1	7-9-62	71	465	8.4	49	22	21	0.6	5	227	20	20	7.3	0.1	0.1	18	264	16	USAC
						2.14	1.78	0.90	0.02	0.18	3.72	0.43	0.56	0.12	0.01	0.2	16			
City of Orland municipal	-22Q1	7-11-62	68	350	8.0	41	15	20	0.7	0	194	13	20	6.3	0.1	0.1	21	214	6	USAC
						2.06	1.23	0.87	0.02	0.00	3.18	0.27	0.55	0.10	0.01	0.2	16			
J. Freitas irrigation	-25B1	7-9-62	68	458	8.3	56	17	22	0.8	2	225	16	22	15	0.1	0.1	18	308	71	USAC
						2.79	1.36	0.93	0.02	0.06	3.68	0.35	0.62	0.25	0.01	0.3	16			
Graves Cemetery irrigation	22N/4W-10B1	7-9-62	64	440	7.5	45	27	18	0.6	0	252	16	22	6.3	0.1	0.1	15	306	9	USAC
						2.25	2.13	0.80	0.02	0.00	4.25	0.35	0.63	0.10	0.01	0.2	22			

g. Determined by addition of constituents.

b. Gravimetric determination.

Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), U.S. Agricultural Consultant, (U.S.A.C.) and State Department of Water Resources (D.W.R.) as indicated.

4. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{0.0}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm
						COLUSA COUNTY (5-31-04)																	
J. Miller domestic	MD3241 13N/1E-22H1	7-23-62		800	8.1	73 3.63	56 4.62	34 1.47	1.3 0.03	0 0.00	467 7.65	24 0.51	33 0.93	26 0.42	0.1 0.01	0.2	44		550	15	413	30	USAC
L. Traynham irrigation	13N/1W-8B1	8-2-62		1,120	8.1	86 4.28	54 4.41	72 3.13	1.6 0.04	0 0.00	201 3.30	5.3 0.11	296 8.35	5.0 0.08	0.1 0.01	0.6	41		690	26	435	270	USAC
W. West irrigation and stock	13N/1W-15N1	7-23-62	69	500	8.4	34 1.68	19 1.62	52 2.25	1.8 0.05	3 0.10	249 4.08	5.3 0.11	48 1.35	2.0 0.04	0.1 0.01	0.5	44		332	40	165	0	USAC
M. V. Doherty	-35Q1	7-23-62	72	395	8.1	26 1.32	16 1.34	37 1.60	2.9 0.07	0 0.00	216 3.53	5.8 0.12	27 0.75	2.0 0.04	0.1 0.01	0.3	43		272	37	133	0	USAC
Grant irrigation	13N/2W-10G1	4-9-62		1,100	7.1	48 2.41	32 2.62	138 6.00	2.0 0.05	0 0.00	209 3.43	24 0.50	240 6.76	0.2 0.04	0.3 0.01	1.6	24		735	54	252	81	DWR
		7-23-62		1,020	8.2	54 2.70	34 2.84	131 5.70	1.8 0.05	0 0.00	241 3.95	10 0.21	241 6.80	0.0 0.15	0.1 0.01	2.6	25		622	50	277	79	USAC
A. Olivetti irrigation	-10W1	4-29-62		569	6.8	20 1.00	18 1.45	84 3.65	2.0 0.04	0 0.00	218 3.56	15 0.33	74 2.08	1.0 0.02	0.1 0.01	1.5	18		415	59	123	0	DWR
		7-23-62		595	8.2	25 1.24	18 1.45	82 3.55	1.0 0.03	0 0.00	223 3.65	10 0.21	76 2.15	1.9 0.30	0.1 0.01	1.6	24		362	56	139	0	USAC
H. Charter irrigation	-22G1	7-23-62	72	710	8.1	30 1.49	32 3.23	70 3.05	1.2 0.03	0 0.00	274 4.50	5.8 0.12	105 2.95	0.0 0.15	0.1 0.01	0.8	25		436	39	236	11	USAC
	-29R1	7-23-62	73	960	8.2	46 2.30	33 2.70	123 5.35	1.5 0.04	0 0.00	271 4.45	24 0.49	188 5.30	3.0 0.05	0.1 0.01	2.3	23		580	52	250	57	USAC
Stapp and Co. domestic	14W/1W-2D1	7-23-62		1,500	8.2	72 3.62	60 4.93	178 7.75	2.2 0.06	6 0.20	281 4.60	160 3.34	298 8.40	0.0 0.00	0.1 0.01	0.4	33		956	47	377	177	USAC
S. Morse irrigation	-12A1	7-23-62	66	560	8.5	11 0.55	5.5 0.45	108 4.70	1.0 0.02	6 0.20	250 4.10	1.0 0.02	4.2 1.38	0.1 0.00	0.1 0.00	0.53	37	Fe (total) 0.02 Al 0.01 As 0.01	354	82	50	0	DWR
E. Arambell irrigation	14W/3W-12L1	7-23-62	67	365	8.2	38 1.89	12 1.03	29 1.25	1.0 0.03	0 0.00	200 3.28	1.9 0.41	18 0.50	6.0 0.10	0.1 0.01	1.2	22		258	30	146	0	USAC
B. Myers domestic and stock	15N/2W-3B1	7-23-62		600	8.3	59 2.96	19 1.59	61 2.65	0.5 0.01	6 0.20	317 5.20	39 0.43	33 0.93	1.3 0.02	0.2 0.01	0.2	19		412	37	228	0	USAC

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Arambell Testing Laboratory (A.T.L.), or California State Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 600 except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-t-rite (NO ₃)	Fluo-ride (F)			Boron (B)	Silico (SiO ₂)		Other constituents	Total ppm	N.C. ppm	
	MDERM																							
Watts Brothers domestic	16N/2W-4H1	7-23-62	67	560	7.8	40 1.93	29 1.37	50 2.17	1.4 0.04	0 0.00	24.3 1.01	77 3.43	33 0.93	3.6 0.06	0.1 0.01	0.1 0.01	0.1 0.01	22		384	33	218	19	USAC
F. J. Orman domestic	16N/3W-9N1	7-23-62		570	8.0	44 2.19	32 1.77	59 2.55	0.4 0.01	0 0.00	255 11.3	20 0.83	70 1.98	3.6 0.06	0.4 0.02		0.1 0.01	17		350	39	198	0	USAC
W. I. Jeffreys irrigation	17N/1W-6R1	7-23-62	60	300	8.0	32 1.60	8.6 0.71	31 1.35	1.5 0.04	0 0.00	21.4 0.93	6.2 0.26	7.1 0.20	0.0 0.00	0.1 0.01	0.1 0.01	0.1 0.01	28		210	37	116	0	USAC
Libby irrigation	-20N1	7-22-62	65	377	8.3	25 1.25	12 1.03	38 1.65	1.5 0.04	0 0.00	21.9 0.93	1.8 0.04	14 0.39	0.0 0.00	0.1 0.00		0.1 0.01	24	Fe (total) 0.02 Al 0.11 As 0.01 Pb 0.01 Mn 0.06	237	42	114	0	DMR
C. Tuttle domestic	17N/2W-12C1	7-23-62	68	420	8.2	44 2.19	17 1.40	37 1.60	1.1 0.03	0 0.00	28.9 1.23	4.3 0.09	19 0.53	0.0 0.00	0.1 0.01	0.1 0.01	0.1 0.01	22		284	31	180	0	USAC
R. E. Patton irrigation	-36F2	7-24-62	66	598	8.2	46 2.30	24 2.77	33 1.44	2.6 0.07	0 0.00	32.3 1.39	25 0.92	19 0.54	0.1 0.00	0.1 0.00		0.2 0.01	26	Fe (total) 0.02 Al 0.06 As 0.01 Pb 0.01	367	22	254	0	DMR
Maxwell Public Utility District municipal	17N/3W-33R1	7-23-62	70	830	8.2	39 1.94	28 2.33	12.0 5.60	1.0 0.03	0 0.00	31.9 1.39	10.0 0.43	26 0.70	1.8 0.03	0.2 0.01		0.4 0.01	27		552	57	314	52	USAC

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Hardness as CaCO ₃		Analyzed by c																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)		Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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a. Determined by addition of constituent.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\mu\text{g/g}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm
	MDB&M							SUTTER COUNTY (CONT.)															
E. Silva Irr.	13N/3E-11Q3	6-8-62		870	8.4	30 1.52	18 1.46	125 5.15	1.3 0.04	4.8 0.16	219 3.59	3.4 0.07	163 4.58	0.0 0.00	0.1 0.00	0.1 0.00	0.8	29	483	66	151	0	USAC
Boccardo Ranch Irr.	-13C1	6-8-62		425	8.2	18 0.88	7.4 0.61	60 2.60	1.5 0.04	0.0 0.00	197 3.23	4.8 0.10	24 0.67	0.0 0.00	0.1 0.00	0.1 0.00	0.27	32	245	63	71	0	USAC
L. Rrai Irr.	-16R1	6-20-62		1320	8.2	60 2.99	70 5.71	90 3.90	1.0 0.03	0.0 0.00	205 3.36	0.0 0.00	325 9.15	0.0 0.00	0.1 0.00	0.1 0.00	0.2	30	677	31	435	267	USAC
F. K. Silva Irr.	-23H	6-8-62		1600	8.0	81 4.04	88 7.21	80 3.47	2.5 0.06	0.0 0.00	159 2.60	16 0.34	411 11.60	0.0 0.00	0.2 0.01	0.1	0.1	31	789	24	562	432	USAC
D. Rouse Irr.	-24D1	6-8-62		2900	7.8	212 10.6	159 13.05	160 6.95	4.0 0.10	0.0 0.00	153 2.52	33 0.69	967 27.25	0.0 0.00	0.1 0.00	0.1 0.00	0.09	26	1637	23	1183	1057	USAC
C. M. Owen Irr.	13N/4E-21A1	6-13-62		700	8.1	56 2.86	44 3.56	33 1.43	1.5 0.04	0.0 0.00	209 3.43	196 4.14	1.8 0.05	0.9 0.01	0.1 0.00	0.1 0.00	0.09	31	468	18	318	146	USAC
J. E. Jopson Irr.	-23Q1	6-13-62		225	8.1	21 1.05	3.4 0.28	19 0.83	0.7 0.02	0.0 0.00	100 1.63	1.9 0.04	14 0.38	3.6 0.06	0.2 0.01	0.0	0.0	43	156	38	62	0	USAC
C. E. Nelson Irr.	13N/5E-7R3	6-26-62		565	8.2	46 2.28	15 1.23	48 2.10	1.4 0.04	0.0 0.00	179 2.93	58 1.20	46 1.30	8.5 0.14	0.1 0.00	0.1 0.00	0.2	68	379	37	176	29	USAC
Calif. Packing Corp. Irr.	-9R1	6-13-62		370	8.2	29 1.44	5.0 0.42	40 1.75	1.2 0.03	0.0 0.00	143 2.35	38 0.78	16 0.45	6.1 0.09	0.1 0.00	0.1 0.00	0.1	54	260	48	93	0	USAC
West Ranch Irr.	-33L	6-21-62		210	8.1	16 0.82	8.9 0.73	12 0.50	0.4 0.01	0.0 0.00	104 1.70	3.8 0.08	6.4 0.18	3.2 0.05	0.2 0.01	0.0	0.0	54	156	24	78	0	USAC
S. A. McKeenan Dom.	14N/1E-2A1	6-12-62		720	8.5	60 3.02	49 4.01	16 0.70	0.7 0.02	0.50	285 4.66	37 0.76	64 1.82	0.0 0.00	0.2 0.01	0.2 0.01	0.1	43	425	9	352	94	USAC
B. Singh Irr.	14N/3E-3C2	6-12-62		1560	7.6	103 5.13	118 9.66	65 2.83	2.3 0.06	0.0 0.00	601 9.85	128 2.67	175 4.92	0.0 0.00	0.1 0.00	0.1 0.00	0.06	26	913	16	740	247	USAC
C. S. Srah Dom. & Irr.	-5A3	6-12-62		1130	8.3	82 4.09	66 5.41	75 3.25	1.2 0.03	7.8 0.26	480 7.86	98 2.05	76 2.15	15 0.25	0.1 0.00	0.1 0.00	0.09	25	682	25	475	69	USAC
L. Littlejohn Dom. & Irr.	-14E2	6-29-62		225	7.9	16 0.82	12 0.95	9.0 0.40	0.9 0.03	0.0 0.00	125 2.05	1.9 0.04	0.7 0.02	0.0 0.00	0.1 0.00	0.1 0.00	0.0	35	137	18	89	0	USAC
J. A. Blevine Dom.	-15H1	6-13-62		890	8.5	59 2.97	65 5.36	36 1.55	1.6 0.04	1.0 0.34	340 5.56	79 1.64	80 2.25	0.0 0.00	0.1 0.00	0.1 0.00	0.03	31	529	16	417	122	USAC
S. E. Best Dom. & Irr.	-16B2	6-7-62		1650	8.1	115 5.76	102 8.40	73 3.17	2.2 0.06	0.0 0.00	358 5.87	100 2.09	339 9.55	0.0 0.00	0.1 0.00	0.1 0.00	0.09	25	932	18	708	414	USAC

a. Determined by addition of constituents.
b. Gravimetric determination.
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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
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						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)			Baran (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm	
	<u>MODERN</u>							<u>SUTTER COUNTY (CONT.)</u>																
Irr.	14N/3E-17A	9-30-62		500	8.4	36 1.78	19 1.60	36 1.55	4.0 0.10	7.8 0.26	202 3.31	0.0 0.00	48 1.35	0.0 0.00	0.1 0.00	0.2	40		290	31	169	0	USAC	
R. Mahon Irr.	-18A2	6-21-62		650	7.9	53 2.63	41 3.38	44 1.90	1.2 0.03	0.0	389 6.39	21 0.45	32 0.90	0.0 0.00	0.1 0.00	0.1	35		419	24	301	0	USAC	
J. Serger Irr.	-28R1	6-29-62		1600	7.4	114 5.72	86 7.09	76 3.30	2.7 0.07	0.0	365 5.98	14 0.29	340 9.61	0.0 0.00	0.1 0.00	0.1	32		844	20	641	342	USAC	
Irr.	-33C	9-30-62		1760	7.8	143 7.13	84 6.92	77 3.35	1.5 0.04	0.0	336 5.50	16 0.35	404 11.70	0.0 0.00	0.1 0.00	0.1	20		911	19	703	428	USAC	
Irr.	-33H	9-30-62		1170	7.5	143 7.13	42 3.45	42 1.83	1.5 0.04	0.0	268 4.40	0.0 0.00	268 7.55	0.0 0.00	0.1 0.00	0.1	24		653	15	529	309	USAC	
E. L. Carrothers Dom.	15N/2E-26D2	6-7-62	67	950	8.4	78 3.92	47 3.91	98 2.50	0.6 0.02	9.0 0.30	328 5.37	48 0.99	81 2.28	0.0 0.00	0.1 0.00	0.1	40		609	23	392	108	USAC	
A. Eager Irr.	15N/3E-4C2	6-12-62		870	8.2	56 2.82	74 6.05	30 1.30	1.7 0.04	0.0	413 6.76	87 1.83	22 0.62	0.0 0.00	0.1 0.00	0.1	43		568	11	444	106	USAC	
R. Paillex Irr.	-26M1	6-20-62		415	7.5	27 1.34	11 0.92	47 2.05	2.8 0.07	0.0	209 3.44	0.0 0.05	27 0.75	0.0 0.00	0.1 0.00	0.29	37		257	47	113	0	USAC	
W. A. Glentzer Irr.	-29G1	6-20-62		750	7.7	106 5.30	23 1.93	33 1.43	1.5 0.04	0.0	430 7.05	25 0.53	16 0.45	0.0 0.00	0.1 0.00	0.03	45		487	16	362	9	USAC	
	<u>MODERN</u>								<u>YUBA COUNTY</u>															
City of Wheatland Mun.	13N/5E-4B	8-28-62		1025	8.2	62 3.12	10 0.79	143 6.20	1.8 0.05	0.0	120 1.97	19 0.41	266 7.50	0.0 0.01	0.2 0.01	0.5	55		617	61	195	99	USAC	
E. Anthony Dom.	14N/4E-7M1	8-9-62		500	7.9	52 2.60	21 1.70	26 1.13	1.0 0.03	0.0	259 4.25	27 0.57	20 0.55	0.0 0.00	0.2 0.01	0.0	52		327	21	215	3	USAC	
F. Hofman Irr.	-22H1	8-16-62		240	8.2	17 0.83	7.8 0.65	22 0.95	1.2 0.03	0.0	103 1.68	4.3 0.09	19 0.52	2.2 0.04	0.1 0.00	0.0	55		178	39	74	0	USAC	
Beeso Brothers Irr.	14N/5E-15C1	8-16-62		230	8.1	20 1.02	6.3 0.52	14 0.60	0.9 0.03	0.0	92 1.50	12 0.25	11 0.30	3.0 0.05	0.1 0.00	0.0	51		163	28	77	2	USAC	
W. M. Holmes Irr.	-16C1	8-16-62		207	8.2	15 0.75	5.2 0.43	22 0.95	0.6 0.02	0.0	95 1.55	6.7 0.14	13 0.34	1.3 0.02	0.2 0.01	0.0	60		171	44	59	0	USAC	
S. R. Johnson Irr.	-22M1	8-16-62		410	8.2	32 1.60	55 0.45	44 1.90	1.3 0.03	0.0	106 1.73	8.2 0.17	68 1.93	1.3 0.02	0.2 0.01	0.1	59		271	48	103	17	USAC	
E. Garcia Irr.	-30J	9-16-62		390	7.6	28 1.40	7.8 0.64	39 1.70	1.3 0.03	0.0	103 2.98	1.9 0.53	68 0.05	1.7 0.00	0.2 0.01	0.1	9		207	45	102	18	USAC	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC).

d. Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

e. Iron (Fe), Aluminum (Al), Arsenic (As), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{1}{100}$ except as shown

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Total ppm
						YUBA COUNTY (CONT.)															
Linda Co. Water Dist. Mun.	15N/4E-20J	8-23-62		360	7.9	30 1.50	19 1.56	14 0.60	1.0 0.03	0.0 0.00	182 2.98	25 0.53	1.8 0.05	0.0 0.00	0.2 0.01	0.0 0.01	0.0	39	153	4	USAC
Linda Co. Water Dist. Mun.	-31A	8-23-62		245	7.8	25 1.27	10 0.84	12 0.50	0.8 0.02	0.0 0.00	145 2.39	1.9 0.04	3.5 0.10	0.0 0.00	0.2 0.01	0.0 0.01	0.0	37	163	0	USAC
Beale Air Force Base Dom.	15N/5E-19N1	8-16-62		180	8.1	12 0.59	5.6 0.47	17 0.75	1.3 0.03	0.0 0.00	76 1.25	2.9 0.06	8.2 0.23	7.4 0.12	0.2 0.01	0.0 0.01	0.0	53	146	53	USAC
La Finca Orchards Co. Irr.	16N/3E-11N1	9-18-62		800	8.2	54 2.68	45 3.72	33 1.43	2.3 0.06	0.0 0.00	198 3.25	18 0.39	14.9 4.20	0.0 0.00	0.2 0.01	0.0 0.01	0.1	49	448	320	USAC
H. Hannagan Irr.	-11R2	8-16-62		370	8.2	34 1.68	19 1.55	15 0.65	2.5 0.06	0.0 0.00	207 3.40	10 0.21	4.6 0.13	3.5 0.06	0.2 0.01	0.0 0.01	0.0	38	229	162	USAC
H. Kerler Dom. & Irr.	-23B	10-3-62		230	8.2	17 0.86	10 0.84	12 0.50	2.3 0.06	0.0 0.00	124 2.03	5.0 0.10	4.7 0.13	0.0 0.00	0.1 0.00	0.1 0.00	0.1	25	137	85	USAC
La Finca Orchards Co. Irr.	-26Q1	8-16-62		268	8.4	32 1.61	5.6 0.47	18 0.80	2.3 0.06	3.0 0.10	136 2.23	9.1 0.19	11 0.31	0.0 0.00	0.2 0.01	0.0 0.01	0.1	56	205	104	USAC
J. Robel Dom.	16N/4E-901	8-10-62		200	7.9	14 0.71	6.2 0.52	16 0.70	1.9 0.05	0.0 0.00	93 1.52	7.2 0.15	8.7 0.25	0.0 0.00	0.2 0.01	0.0 0.01	0.1	44	144	62	USAC
J. Matthews Irr.	17N/3E-26C	8-10-62		550	8.5	47 2.35	36 3.00	24 1.05	1.1 0.03	18 0.60	271 4.45	24 0.50	14 0.40	19 0.31	0.2 0.01	0.0 0.01	0.0	50	367	268	USAC
						PLACER COUNTY															
K. Terioku Irr.	10N/5E-601	8-3-62		320	8.5	24 1.20	7.3 0.60	32 1.40	0.7 0.02	6.0 0.20	144 2.32	1.9 0.04	18 0.50	4.5 0.07	0.2 0.01	0.0	48	213	90	0	USAC
A. Lampen Dom. & Irr.	10N/6E-5C	8-3-62		180	7.9	11 0.54	7.8 0.64	15 0.65	0.5 0.02	0.0 0.00	85 1.40	1.2 0.04	11 0.30	2.7 0.04	0.4 0.02	0.0	60	153	59	0	USAC
R. Dixon Dom. & Irr.	-10D	8-3-62		410	8.2	32 1.60	18 1.52	28 1.20	3.5 0.09	0.0 0.00	190 3.12	10 0.20	28 0.80	7.7 0.13	0.1 0.00	0.0	61	283	156	0	USAC
R. L. Sharpless Irr.	11N/5E-6A1	8-3-62		265	8.1	17 0.87	11 0.92	20 0.87	1.1 0.03	0.0 0.00	124 2.03	3.4 0.07	13 0.36	6.4 0.11	0.2 0.01	0.1	47	180	90	0	USAC
P. B. Minarick Irr.	-18H	8-3-62		285	8.1	19 0.93	6.3 0.52	30 1.30	2.3 0.06	0.0 0.00	123 2.05	5.3 0.11	21 0.57	0.0 0.00	0.2 0.01	0.1	52	197	73	0	USAC

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b. Gravimetric determination.
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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm	
	KDB&M					PLACER COUNTY (CONT'D.)																		
M. Heinix Irr.	11N/5E-31A1	8-3-62		330	6.7	20 1.01	8.3 0.68	33 1.43	2.0 0.05	0.0 0.00	116 1.90	4.8 0.10	25 0.70	21 0.34	0.2 0.01	0.3	60			231	44	85	0	USAC
W. R. Fidelity Irr.	11N/6E-16D1	8-3-62		360	8.1	16 0.78	6.1 0.50	48 2.10	1.2 0.03	0.0 0.00	99 1.62	11 0.24	46 1.29	8.1 0.15	0.2 0.01	0.8	65			250	62	64	0	USAC
Diamond "X" Ranch Dom. & Irr.	-270	8-3-62		265	8.2	22 1.10	9.0 0.74	22 0.95	1.3 0.03	0.0 0.00	128 2.10	7.7 0.16	14 0.40	3.0 0.05	0.2 0.01	0.1	65			207	34	92	0	USAC
Sierra View Land Co. Irr.	-34B	8-3-62		285	8.2	24 1.20	8.6 0.71	24 1.05	1.3 0.03	0.0 0.00	152 2.50	5.8 0.12	10 0.27	0.6 0.01	0.2 0.01	0.1	66			216	35	96	0	USAC
R. Mariner Irr.	12N/5E-28L	8-3-62		205	8.3	13 0.67	6.7 0.55	20 0.87	0.7 0.02	1.8 0.06	100 1.63	7.2 0.15	6.4 0.18	0.8 0.01	0.2 0.01	0.2	60			166	41	61	0	USAC
F. Bonfield Irr.	-3D	8-3-62		230	8.2	13 0.64	3.5 0.29	37 1.60	1.3 0.03	0.0 0.00	133 2.18	1.4 0.03	11 0.30	0.0 0.00	0.1 0.00	0.3	49			181	62	47	0	USAC
USAF Communications Ind.	-23C1	8-3-62		230	8.1	15 0.77	4.5 0.37	24 1.05	0.4 0.01	0.0 0.00	100 1.63	1.9 0.04	11 0.30	10 0.16	0.2 0.00	0.1	62			178	48	57	0	USAC
F. W. Fullerton Dom. & Irr.	12N/6E-16D2	8-3-62		650	8.1	24 1.18	15 1.22	88 3.88	0.5 0.02	0.0 0.00	139 2.28	5.5 1.15	89 2.50	17 0.26	0.2 0.01	0.1	54			410	61	120	6	USAC
G. Blake Dom.	13N/5E-13D	8-3-62		510	7.8	22 1.12	8.4 0.69	66 2.87	0.6 0.02	0.0 0.00	88 1.45	4.2 0.89	76 2.15	2.7 0.04	0.2 0.01	0.3	60			322	61	91	18	USAC
W. Brown Irr.	-24F1	8-3-62		290	8.0	25 1.24	12 0.01	17 0.75	0.2 0.01	0.0 0.00	123 2.02	7.7 0.16	28 0.79	5.0 0.08	0.1 0.00	0.1	50			206	25	113	12	USAC
H. Porter	13N/6E-6D	8-3-62		132	7.7	6.0 0.30	1.9 0.16	20 0.87	0.3 0.01	0.0 0.00	57 0.93	7.2 0.15	3.9 0.11	4.7 0.08	0.4 0.02	0.0	48			120	65	23	0	USAC
L. Gunther Dom. & Irr.	-16D	8-3-62		295	8.2	23 1.13	14 1.15	17 0.75	1.3 0.03	0.0 0.00	141 2.32	8.6 0.18	15 0.43	0.0 0.00	0.1 0.00	0.0	21			170	25	114	0	USAC
L. Franceschi	-33C1	8-3-62		300	7.2	25 1.23	12 1.04	20 0.87	0.5 0.02	0.0 0.00	139 2.29	2.0 0.42	12 0.33	1.7 0.03	0.2 0.01	0.2	28			188	28	114	0	USAC

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b. Gravimetric determination.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as mg/l, except as shown.

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						equivalents per million												Total ppm	N.C. ppm			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)	Silica (SiO ₂)

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.).

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown.

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1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	Mineral constituents in parts per million										Total dissolved solids in ppm	Per-cent sodium	Hardness as CaCO ₃		Analyzed by	
					equivalents per million												Total ppm	N.C. ppm		
					Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)
YOLCO COUNTY (CONT.)																				
W. Hodge Irr.	8N/14-13C1	7-12-62	70	8.3	38 1.90	36 2.97	54 2.35	0.2 0.00	5.4 0.18	289 4.73	43 0.91	6.4 0.10	0.2 0.01	0.4	34		402	33	244	USAC
Willowbank Corp. Dom. & Irr.	8N/2E-13F2	7-10-62	70	8.3	25 1.26	47 3.94	49 2.13	0.8 0.02	6.0 0.20	371 6.08	32 0.67	3.4 0.06	0.2 0.01	0.5	30		394	29	260	USAC
B. K. Howatt Irr.	8N/3E-5P1	7-10-62	68	7.50	29 1.46	44 3.59	80 3.47	1.9 0.05	28 0.92	315 5.16	49 1.02	2.1 0.03	0.1 0.00	1.0	35		468	41	253	USAC
B. K. Howatt Irr.	-5Q1	7-10-62	69	7.20	24 1.22	44 3.56	75 3.25	1.0 0.03	15 0.50	310 5.09	47 0.93	0.6 0.01	0.1 0.00	0.8	32		438	40	239	USAC
W. C. Hamel Irr.	-19D1	7-10-62	66	9.80	43 2.17	83 6.82	67 2.90	1.0 0.03	0.0 0.00	576 9.45	59 1.22	12 0.20	0.2 0.01	0.5	33		627	24	450	USAC
Wilber Dom.	-19W2	7-10-62	72	15.70	250 12.50	33 2.74	107 4.65	1.0 0.03	34 1.14	911 14.93	118 2.46	58 0.93	0.2 0.01	1.4	32		1083	24	762	USAC
Rice Growers Assoc. Iod.	8N/4E-3B1	7-11-62	80	7.70	53 2.66	22 1.77	69 3.00	4.9 0.13	0.0 0.00	181 2.97	0.0 0.00	0.0 0.00	0.2 0.01	0.3	39		439	40	222	USAC
Dumars Irr.	9N/1E-12A1	7-16-62	70	7.20	26 1.29	44 3.64	64 2.86	0.6 0.02	14 0.46	249 4.03	40 0.85	73 0.13	0.2 0.01	1.0	30		422	36	247	USAC
Dumars Dom.	9N/14-16H1	7-12-62	78	9.00	53 2.64	28 2.32	104 4.50	0.3 0.01	9.3 0.31	293 4.80	75 1.57	0.0 0.00	0.4 0.02	0.6	21		532	48	248	USAC
Chapman Brothers Irr.	-30L1	7-17-62	70	7.70	59 2.93	32 2.60	66 2.87	1.0 0.03	0.0 0.00	329 5.40	54 1.12	19 0.30	0.2 0.01	0.7	28		482	34	277	USAC
T. Barrios Irr.	9N/2E-4L1	7-10-62	68	8.2	38 1.88	35 2.92	49 2.13	1.6 0.04	0.0 0.00	327 5.35	22 0.46	3.9 0.06	0.2 0.01	1.6	19		375	31	240	USAC
R. Staettmuller Irr.	-100L	7-10-62	69	12.20	56 2.76	81 6.74	105 4.55	1.2 0.03	0.0 0.00	688 10.78	44 0.93	18 0.29	0.2 0.01	3.6	23		740	32	476	USAC
E. Chiles Dom. & Irr.	-35D1	7-10-62	70	13.00	25 1.26	86 7.08	157 6.83	0.8 0.02	45 1.50	583 9.55	50 1.05	0.0 0.00	0.2 0.01	0.5	20		785	45	417	USAC
Woodland Farms Irr.	9N/3E-702	7-10-62	77	7.00	30 1.50	28 2.26	87 3.80	1.3 0.03	0.1 0.10	351 5.75	42 0.89	0.0 0.00	0.2 0.01	2.0	18		411	50	188	USAC
Reikes Dom.	9N/4E-33L1	7-11-62	75	16.70	82 4.12	35 2.94	235 10.20	6.5 0.17	0.0 0.00	241 3.95	48 1.00	0.0 0.00	0.2 0.01	1.4	40		1009	58	353	USAC
Scarlett & Owens Irr.	10N/1E-1C1	7-9-62	76	8.4	63 3.14	48 3.99	50 2.18	1.8 0.05	6 0.20	397 6.51	28 0.58	14 0.22	0.2 0.01	1.9	24		493	23	357	DWR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per- cent sodium	Hardness as CaCO ₃		Analyzed by
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Barium (Ba)	Silica (SiO ₂)			
										YOLO COUNTY (CONT'D.)										
N. Corcoran Dom.	10N/1E-15G1	7-11-62	70	880	8.5	43 2.15	49 3.99	89 3.87	0.1 0.00	1.3 0.42	392 6.43	71 1.49	52 1.44	12 0.19	0.2 0.01	0.9 0.01	29	39	307	0 USAC
A. Summ Irr.	-26A1	7-17-62	68	550	8.4	26 1.28	31 2.55	45 1.95	1.8 0.05	6.0 0.20	215 3.51	28 0.59	47 1.33	6.0 0.10	0.2 0.01	1.3 0.01	18	34	192	6 USAC
C. Davis Irr.	10N/14-4B1	7-12-62	69	540	8.4	40 2.01	24 2.02	44 1.90	0.3 0.01	8.4 0.28	285 4.66	15 0.33	17 0.47	6.0 0.10	0.4 0.02	0.3	25	32	202	0 USAC
Ferro & Canepa Irr.	-36K2	7-12-62	71	1300	8.3	29 1.43	66 5.12	155 6.75	1.4 0.04	5.4 0.18	294 4.82	139 2.90	194 5.44	5.0 0.08	0.1 0.00	7.9	18	49	343	93 USAC
W. K. Love Dom.	10N/2E-1Q1	7-9-62	76	2710	7.7	169 8.43	150 12.35	224 9.74	4.4 0.11	0.0 0.00	531 8.70	409 8.52	468 13.20	2.2 0.04	0.2 0.01	6.2	24	32	1040	605 DMR
Spreckels Sugar Ind.	-16B1	7-9-62	70	704	8.2	33 1.65	42 3.50	51 2.22	2.2 0.06	0.0 0.00	297 4.87	32 0.67	62 1.75	8.8 0.14	0.2 0.01	2.2	22	30	258	14 DMR
City of Woodland Dom.	-27H1	7-9-62	78	560	8.4	43 2.13	26 2.12	44 1.90	1.8 0.05	6.0 0.20	273 4.48	15 0.33	45 1.25	0.5 0.01	0.1 0.00	1.4	22	31	213	0 USAC
J. Monroe Irr.	10N/24-1W1	7-12-62	70	480	8.4	36 1.82	21 1.69	39 1.70	0.4 0.01	5.4 0.18	252 4.13	14 0.28	12 0.34	9.5 0.15	0.2 0.01	0.1	21	33	176	0 USAC
J. Peterson Dom. & Irr.	-16L1	7-12-62	74	1080	7.9	82 4.09	56 4.59	98 4.25	0.7 0.02	0.0 0.00	583 9.55	40 0.85	94 2.65	17 0.27	0.2 0.01	1.5	21	33	434	0 USAC
J. Howard Stock	-17J2	7-12-62		780	8.2	18 0.88	17 1.39	143 6.20	0.2 0.01	0.0 0.00	319 5.24	58 1.21	67 1.87	8.5 0.14	0.2 0.01	0.4	26	73	114	0 USAC
M. Bowles Dom.	-18F1	7-12-62		1720	8.2	71 3.56	39 3.21	270 11.75	0.3 0.01	0.0 0.00	448 7.35	98 2.05	318 8.95	20 0.32	1.0 0.05	0.9	33	63	339	0 USAC
W. W. McGlary Dom. & Irr.	-18F2	7-12-62	76	1550	7.6	124 6.22	55 4.52	153 6.65	1.6 0.04	0.0 0.00	429 7.04	189 3.94	206 5.86	22 0.36	0.2 0.01	1.1	25	38	537	185 USAC
V. White Dom.	-18L1	7-12-62	74	1180	7.9	76 3.82	41 3.38	140 6.10	0.3 0.01	0.0 0.00	393 6.45	163 3.40	130 3.65	6.2 0.10	0.2 0.01	1.5	18	46	360	37 USAC
C. A. Kutsuris Dom.	-23A1	7-12-62	74	500	8.4	48 2.41	15 1.23	40 1.75	0.6 0.02	4.2 0.14	268 4.40	17 0.36	8.9 0.25	9.5 0.15	0.2 0.01	0.4	23	34	182	0 USAC
D. Schlissor Dom.	11N/1E-4R1	7-9-62	73	869	8.6	27 1.35	40 3.31	119 5.13	1.6 0.04	17 0.57	425 6.96	46 0.96	44 1.24	0.1 0.00	0.6 0.03	2.7	33	58	233	0 DMR
J. J. Slaveo Irr.	-17M	7-9-62	70	518	8.4	37 1.85	30 2.49	34 1.48	1.4 0.04	4 0.13	318 5.21	5.8 0.12	9.5 0.27	4.7 0.08	0.2 0.01	0.63	36	25	217	0 DMR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Treated by U.S. Geological Survey Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), or State Department of Water Resources Laboratory (T.I.L.) or State Department of Water Resources Laboratory (T.I.L.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{100}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos/cm at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm
	MDBLM					SACRAMENTO COUNTY																
G. Rosellini Dom.	4N/3E-22Q	8-23-62		230	8.4	4.6 0.23	3.4 0.28	43 1.86	0.8 0.02	1.5 0.05	108 1.77	8.1 0.17	12 0.33	0.0 0.00	0.1 0.00	0.1	29	156	78	0	USAC	
R. C. Whittemore Irr.	6N/7E-23A1	8-30-62		180	7.5	8.4 0.42	7.4 0.37	22 0.95	2.2 0.06	0.0 0.00	58 0.95	20 0.42	7.1 0.20	7.2 0.12	0.4 0.02	0.1	64	168	53	0	USAC	
F. J. Ovesto Dom.	6N/8E-15V1	8-30-62	72	160	8.2	13 0.66	4.4 0.36	8.8 0.38	2.8 0.07	0.0 0.00	57 0.93	1.9 0.04	7.1 0.20	1.1 0.01	0.2 0.01	0.0	66	143	26	5	USAC	
M. Perry Irr.	7N/4E-4R1	8-23-62	58	210	8.5	21 1.06	7.0 0.57	10 0.43	2.8 0.07	4.5 0.15	109 1.78	0.0 0.00	3.5 0.10	0.0 0.00	0.1 0.00	0.1	29	131	20	0	USAC	
G. F. Rothfelder Irr.	7N/7E-27B1	8-29-62		320	8.5	28 1.40	15 1.22	16 0.70	1.4 0.04	4.5 0.15	149 2.45	1.9 0.04	17 0.49	9.3 0.15	0.1 0.00	0.0	48	215	21	0	USAC	
E. Pilliken Dom.	8N/8E-29K1	8-29-62		180	8.2	14 0.72	4.2 0.34	18 0.86	1.1 0.03	0.0 0.00	49 0.80	30 0.63	12 0.33	0.0 0.00	0.2 0.01	0.1	50	154	42	13	USAC	
K. Kimura Irr.	9N/4E-8L1	8-16-62	66	1060	8.2	69 3.44	48 3.96	101 4.40	2.3 0.06	0.0 0.00	426 6.98	104 2.17	87 2.45	8.4 0.14	0.1 0.00	0.3	40	669	37	21	USAC	
L. M. Svalley Irr.	-27F1	10-5-62	61	720	8.2	41 2.07	17 1.41	85 3.70	2.0 0.05	0.0 0.00	223 3.65	0.0 0.00	122 3.42	0.0 0.00	0.1 0.00	0.5	40	417	51	0	USAC	
Air Products Inc. Dom. & Ind.	9N/7E-21D1	8-10-62		326	8.2	31 1.55	13 1.07	14 0.61	4.8 0.12	0.0 0.00	162 2.66	13 0.27	10 0.28	2.7 0.04	0.1 0.00	0.04	55	224	18	0	DWR	
F. E. Olson Dom.	-26H1	8-10-62		136	7.7	14 0.70	2.4 0.20	8.6 0.37	1.0 0.02	0.0 0.00	54 0.88	5.4 0.11	5.8 0.16	5.9 0.10	0.1 0.00	0.06	54	123	29	45	1	DWR
Aerojet General Corp Ind.	-28K1	8-3-62		235	7.7	23 1.15	7.9 0.65	14 0.61	2.3 0.06	0.0 0.00	131 2.15	3.4 0.07	7.1 0.20	0.0 0.00	0.2 0.01	0.02	63	185	25	0	DWR	
J. A. Rodgers Dom.	-32B1	8-10-62		181	7.3	15 0.75	9.4 0.77	8.0 0.35	0.5 0.01	0.0 0.00	90 1.48	4.6 0.10	5.4 0.15	5.4 0.09	0.1 0.00	0.06	46	138	19	2	DWR	
B. Petrucci Dom. & Ind.	-33E1	8-10-62		342	7.7	31 1.55	18 1.47	11 0.48	0.9 0.02	0.0 0.00	186 3.05	6.4 0.13	11 0.31	0.0 0.00	0.1 0.00	0.02	38	207	14	0	DWR	
Irr.	10N/4E-13P1	8-16-62	61	440	8.8	35 1.75	16 1.25	36 1.55	1.3 0.03	1.5 0.50	164 2.68	5.3 0.11	4.1 1.15	4.1 0.07	0.1 0.00	0.0	61	295	34	0	USAC	
H. A. Sorensen Dom. & Irr.	10N/6E-27L	10-9-62	72	340	8.7	29 1.46	13 1.08	21 0.90	1.4 0.04	4.5 0.15	146 2.47	0.1 0.01	26 0.73	0.0 0.00	0.1 0.00	0.1	62	230	26	0	USAC	

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{ppm}{800}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	Store well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by	
						equivalents per million												Boron (B)	Silico (SiO ₂)		Other constituents
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicarbonate (CO ₃)	Bicarbonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ride (NO ₃)	Fluo-ride (F)						
J. Barba Irr. Reclamation Dist. 3 Dom.	MOD&M 4N/3E-13J1 -14F1	11-20-63	63	1390	8.4	78 3.89	71 5.84	133 5.80	2.5 0.06	12 0.40	610 10.00	14 0.03	176 4.95	7.8 0.13	0.1 0.00	0.4	46	487	0	USAC	
		8-23-62	840	8.7	17 0.84	7.2 0.59	175 7.60	1.5 0.04	18 0.60	296 4.85	30 0.63	98 2.75	0.0 0.00	0.1 0.00	1.2 0.00	1.2	21	72	0	USAC	
City of Rio Vista Mun. Calif. Packing Corp. Dom.	4N/3E-31F2 5N/2E-25K	5-23-62	63	788	8.4	15 0.73	15 1.24	161 7.00	2 0.06	44 1.48	256 4.20	47 0.99	70 1.97	6 0.09	0.3 0.01	0.96	28	99	0	D&R	
		5-23-62	1470	8.3	45 2.25	98 8.07	172 7.70	2 0.06	0 0.00	1060 17.46	27 0.56	25 0.70	2 0.03	0.5 0.03	1.08	40	516	0	D&R		
Elmire Fire District Ind. City of Vacaville Mun.	6N/1E-19L2 -19Q1	5-23-62	65	753	7.8	62 3.08	23 1.91	61 2.64	0.3 0.01	0 0.00	312 5.12	51 1.07	29 0.82	54 0.87	0.5 0.02	0.21	22	250	0	D&R	
		5-23-62	765	7.3	66 3.32	24 2.04	63 2.73	1 0.02	0 0.00	201 4.94	79 1.65	47 1.32	8 0.14	0 0.00	0.12	21	268	21	D&R		
City of Vacaville Mun. Friddy Irr.	-23L 6N/2E-20R2	5-24-62	67	636	7.5	48 2.38	22 1.77	53 2.31	1 0.08	0 0.00	285 4.76	57 1.18	21 0.61	1 0.02	0.2 0.01	0.10	25	208	0	D&R	
		5-23-62	1010	8.3	37 1.83	74 6.07	37 1.60	1 0.02	0 0.00	415 6.75	64 1.34	45 0.24	7 0.12	0.2 0.01	0.21	19	395	132	D&R		
Buckley Irr. T. Rose Irr.	7N/2E-20L -34C2	6-8-62	67	925	8.0	39 1.95	81 6.66	52 2.26	0.9 0.02	0 0.00	579 9.49	29 0.60	22 0.62	7.8 0.02	0.2 0.01	0.70	36	431	0	D&R	
		5-23-62	765	8.4	18 0.84	59 4.84	51 2.22	1 0.02	37 1.24	361 5.91	39 0.83	33 0.92	8 0.14	0 0.00	0.84	21	338	142	D&R		
R. Schulse Irr.	8N/1E-26F1	5-23-62	68	559	8.1	30 1.50	34 2.82	45 1.94	2 0.05	0 0.00	202 4.95	31 0.64	20 0.56	6 0.09	0.0 0.00	0.17	20	216	0	D&R	

a. Determined by addition of constituents.

b. Gravimetric determination, U.S.G.S. Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC).

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC), Terminal Testing Laboratory (TTL) or State Department of Water Resources (SDWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{100}$ except as shown.

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1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million equivalents per million										Total dissolved solids in ppm	Per-capitum sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents		Total ppm
	<u>MDB&M</u>							<u>SAN JOAQUIN VALLEY</u>	<u>5-22</u>												
	<u>SAN JOAQUIN COUNTY</u>																				
San Joaquin County Dom.	1N/4E-3N1	7-20-62	68	1210	8.4	44 2.21	26 2.12	200 8.70	1.5 0.04	12 0.40	467 7.65	8.0 0.17	158 4.45	3.6 0.06	0.1 0.00	1.2 0.00	29	67	217	0	USAC
Calif. Water Service Mun.	1N/6E-4D1	7-3-62	71	980	8.4	9.0 0.45	6.0 0.54	114 4.95	1.1 0.03	6.0 0.20	198 3.25	2.0 0.05	87 2.45	0.0 0.00	0.1 0.00	0.6 0.00	48	83	50	0	USAC
Fiberboard Products Ind.	-10P1	7-20-62	72	2950	8.2	125 6.25	51 4.20	461 20.05	7.5 0.19	0.0 0.00	147 2.42	3.0 0.07	933 28.00	0.0 0.00	0.2 0.01	0.2 0.01	53	67	523	402	USAC
Calif. Water Service Mun.	-14H1	7-3-62		480	8.4	12 0.60	4.0 0.25	84 3.65	0.8 0.02	4.5 0.15	174 2.85	1.0 0.01	58 1.62	0.0 0.00	0.1 0.00	0.6 0.00	46	81	43	0	USAC
J. Sanguinelli Irr.	1N/7E-11J1	7-3-62		290	8.4	22 1.11	9.4 0.77	20 0.87	3.2 0.08	3.6 0.12	133 2.13	4.8 0.10	8.9 0.25	4.7 0.08	0.2 0.01	0.1 0.01	64	31	94	0	USAC
R. Duarte Irr.	-12C1	7-16-62	66	315	8.4	25 1.26	11 0.87	19 0.83	3.8 0.10	3.0 0.10	149 2.45	5.3 0.11	8.9 0.25	2.8 0.05	0.2 0.01	0.1 0.01	59	27	107	0	USAC
Slang Irr.	1N/9E-18G1	7-6-62	66	208	8.1	15 0.76	6.6 0.54	13 0.55	2.8 0.07	0.0 0.00	81 1.33	2.4 0.05	7.8 0.22	15 0.25	0.2 0.01	0.1 0.01	69	29	65	0	USAC
Calif. Water Service Mun.	2N/6E-27J1	7-19-62	66	360	8.4	24 1.19	8.5 0.70	34 1.47	3.5 0.09	4.5 0.15	171 2.80	9.1 0.19	7.1 0.20	1.4 0.02	0.2 0.01	0.2 0.01	42	43	95	0	USAC
Linden Water Service Dom.	2N/8E-15J1	7-16-62	68	235	8.3	21 1.05	7.8 0.64	12 0.50	6.3 0.16	2.1 0.07	123 2.01	2.9 0.06	1.8 0.05	3.8 0.07	0.2 0.01	0.0 0.01	60	21	85	0	USAC
F. DeBenedetti Dom. & Irr.	2N/9E-7G1	7-26-62	62	270	8.2	29 1.45	9.0 0.74	11 0.47	3.1 0.08	0.0 0.00	133 2.18	12 0.25	7.4 0.21	0.0 0.00	0.2 0.01	0.1 0.01	47	17	110	0	USAC
M. T. Coop Dom.	4N/4E-14C1	7-19-62	68	990	8.3	17 0.85	5.6 0.46	200 8.70	1.3 0.03	3.0 0.10	221 3.62	20 0.42	204 5.75	0.0 0.00	0.2 0.01	1.6 0.01	28	87	66	0	USAC
O. C. Gallagher Dom.	4N/5E-8H1	7-19-62	66	5200	7.6	307 15.30	206 16.90	498 21.65	2.0 0.05	0.0 0.00	396 6.50	0.5 0.01	1679 47.35	0.0 0.00	0.1 0.00	1.0 0.00	31	40	1610	1285	USAC
Jabaut Ranch Dom. & Stock	4N/6E-11P1	7-16-62	68	240	8.2	20 0.99	10 0.85	14 0.60	1.6 0.04	0.0 0.00	115 1.88	2.9 0.06	12 0.33	3.3 0.05	0.2 0.01	0.1 0.01	64	28	92	0	USAC
K. Elston Dom. & Irr.	4N/7E-23B3	7-16-62	68	252	8.3	17 0.86	7.2 0.59	20 0.87	2.5 0.06	1.5 0.05	113 1.85	0.5 0.01	11 0.31	5.2 0.08	0.2 0.01	0.1 0.01	67	36	73	0	USAC
A. T. Sims Irr.	5N/8E-31J1	7-19-62	69	185	7.9	12 0.60	9.6 0.68	14 0.60	2.5 0.06	0.0 0.00	88 1.45	5.0 0.10	6.0 0.17	5.8 0.09	0.2 0.01	0.0 0.00	60	31	64	0	USAC

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent solids in ppm	Hardness as CaCO ₃		Analyzed by c			
						equivalents per million												Total ppm	N.C. ppm				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)	Silica (SiO ₂)	Other constituents
	MDB&M																						
Calif. Packing Corp. Dom.	1S/4E-14W1	7-20-62	66	1450	8.4	22 1.12	13 1.11	290 12.60	0.9 0.02	9.0 0.30	241 3.95	264 5.50	174 4.90	0.0 0.00	0.1 0.00	1.6 0.00	24	916	85	113	0	USAC	
L. Brooke Dom.	1S/5E-10H2	7-20-62	71	1140	7.6	89 4.46	47 3.92	74 3.20	2.2 0.06	0.0 0.00	233 3.82	89 1.86	205 5.78	0.0 0.00	0.2 0.01	0.1 0.01	31	652	30	419	228	USAC	
G. S. Calcagno Dom. & Irr.	1S/6E-4A1	7-20-62	68	1800	8.0	131 6.56	61 5.03	143 6.20	2.0 0.05	0.0 0.00	168 2.75	26 0.54	503 14.18	0.0 0.00	0.1 0.00	1.6 0.00	30	979	35	580	342	USAC	
Irr.	1S/9E-8H1	7-26-62	70	320	8.2	17 0.86	6.6 0.54	19 0.83	2.9 0.07	0.0 0.00	100 1.63	9.1 0.19	11 0.30	8.0 0.14	0.2 0.01	0.2 0.01	69	192	36	70	0	USAC	
A. Dusioa Dom.	2S/4E-1P1	7-27-62	69	615	8.0	28 1.41	8.9 0.73	90 3.90	1.1 0.03	0.0 0.00	107 1.75	128 2.67	48 1.35	6.6 0.12	0.2 0.01	0.6 0.1	25	389	64	107	19	USAC	
H. C. Jepsen Irr.	-36P1	7-27-62	73	1290	8.1	73 3.63	35 2.90	143 6.20	3.5 0.09	0.0 0.00	169 2.77	299 6.23	126 3.55	1.2 0.20	0.2 0.01	1.3 0.1	28	803	48	327	189	USAC	
West Side I.D. Irr.	2S/5E-22Q1	7-27-62	71	1250	8.0	60 2.98	36 2.96	157 6.83	3.0 0.08	0.0 0.00	140 2.30	196 4.08	222 6.25	14 0.23	0.2 0.01	1.0 0.1	33	790	53	297	182	USAC	
West Side I.D. Irr.	-23P1	7-27-62	64	1800	8.1	82 4.12	61 5.00	205 8.90	1.8 0.05	0.0 0.00	170 2.78	226 4.71	348 9.80	28 0.46	0.2 0.01	1.8 0.1	45	1167	49	456	317	USAC	
West Side I.D. Irr.	-29Q1	7-27-62	65	1900	7.7	114 5.70	66 5.38	190 8.25	3.2 0.08	0.0 0.00	348 5.70	203 4.22	270 9.00	7.2 0.12	0.2 0.01	1.4 0.1	42	1244	43	554	269	USAC	
State of Calif. Dom. & Irr.	2S/6E-20U4	7-27-62	69	940	8.2	47 2.33	19 1.55	125 5.43	2.0 0.05	0.0 0.00	155 2.55	163 3.39	117 3.30	0.0 0.00	0.2 0.01	0.5 0.1	32	582	58	194	66	USAC	
W. E. Lee Dom.	2S/7E-20R1	7-27-62	68	490	8.3	50 2.50	15 1.20	30 1.30	3.3 0.08	0.0 0.13	181 2.97	29 0.59	19 0.53	44 0.72	0.2 0.01	0.1 0.1	47	330	26	185	30	USAC	
L. Huck Dom.	3S/5E-8L1	7-27-62	75	820	7.8	58 2.88	26 2.07	78 3.10	2.5 0.06	0.0 0.00	152 2.50	89 1.87	98 2.75	64 1.03	0.2 0.01	0.8 0.1	40	531	40	248	123	USAC	
James Clayton Co. Irr.	-24F1	7-27-62	74	1350	8.0	113 5.67	36 2.99	125 5.43	1.8 0.05	0.0 0.00	177 2.90	277 7.84	99 2.86	32 0.52	0.2 0.01	0.9 0.1	22	893	38	433	288	USAC	
W. Moler Irr.	-26M	7-27-62	74	1140	8.1	74 3.72	34 2.79	128 5.50	2.0 0.05	0.0 0.00	107 1.75	371 7.72	71 2.00	25 0.40	0.2 0.01	0.9 0.1	36	794	46	325	37	USAC	
Banta-Carbena I.O. Irr.	3S/6E-7F1	7-27-62	65	1625	8.0	61 3.07	37 3.08	225 9.80	2.9 0.07	0.0 0.00	128 2.10	197 4.11	330 9.30	18 0.25	0.2 0.01	1.4 0.1	29	963	61	308	203	USAC	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch, (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Analyzed by U.S. Geological Survey, Quality of Water Branch, (U.S.G.S.), Pacific Chemical Consultants (P.C.C.),

d. Terminals Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.

e. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), repaired here as gage except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Hardness as CaCO ₃		Analyzed by c			
						equivalents per million											Total ppm	N.C. ppm				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)					Boron (B)	Silica (SiO ₂)	Other constituents
SAN JOAQUIN VALLEY (5-22) STANISLAUS COUNTY																						
A. Groves Irrigation	1N/10E-17G	8-16-62	74	275	8.1	22 1.11	12 1.00	16 0.70	2.0 0.05	0 0.00	136 2.23	8.7 0.18	12 0.33	8.2 0.13	0.2 0.01	0.10	4.1	178	24	106	0	USACL
J. Dunn Irrigation	1S/10E-33R1	9-6-62	72	53				2.4 0.10	1.0 0.02				0.3 0.01			0.10			18	22		DWR
J. Demartini Irrigation	1S/11E-36E1	8-22-62	71	201				11 0.48	3.2 0.08				5.6 0.16			0.13			23	75		DWR
A. Ramirez Irrigation	2S/10E-10D1	8-16-62	70	160	8.2	13 0.67	5.7 0.47	2.4 0.41	2.8 0.07	0 0.00	79 1.30	0.9 0.02	0.0 0.00	5.2 0.08	0.2 0.01	0.00	4.8	135	25	57	0	USACL
Oakdale Land Co. Irrigation	2S/10E-27G1	9-6-62	73	380	8.2	38 1.91	13 1.11	26 1.13	2.9 0.07	0 0.00	222 3.64	4.8 0.10	11 0.30	13 0.21	0.2 0.01	0.00	35	228	27	151	0	USACL
Modesto I.D. Irrigation	3S/7E-13M2	7-13-62	67	498	8.4	23 1.15	24 1.95	57 2.48	4.5 0.12	6 0.20	206 3.38	4.9 1.02	27 0.76	24 0.39	0.1 0.01	0.13	57	314	44	155	0	DWR
Modesto I.D. Irrigation	3S/7E-24J1	7-13-62	66	676				73 3.18	2.7 0.07				19 0.54			0.18			42	213		DWR
J. E. Gardner domestic	3S/7E-33C1	8-15-62	73	1,010				14.5 6.31	3.6 0.09				192 5.61			0.35			64	170		DWR
Modesto I.D. Irrigation and stock	3S/8E-6M1	7-13-62	67	657				53 2.30	4.0 0.10				26 0.73			0.17			32	237		DWR
Modesto I.D. Irrigation	3S/8E-9C1	7-13-62	67	423	8.3	43 2.14	14 1.20	28 1.22	4.6 0.12	0 0.00	218 3.57	11 0.23	12 0.34	18 0.29	0.1 0.01	0.09	60	278	26	167	0	DWR
Modesto I.D. Irrigation	3S/8E-20J1	7-13-62	69	554				33 1.44	2.0 0.05				17 0.48			0.14			24	223		DWR
Modesto I.D. Irrigation	3S/8E-23E1	8-15-62	66	439				20 2.18	2.0 0.05				13 0.37			0.11			40	157		DWR
Modesto I.D. Irrigation	3S/9E-6R1	7-18-62	67	548				32 1.39	2.8 0.07				18 0.51			0.10			24	210		DWR
Atlas Olympia Co. Irrigation	3S/10E-13A1	8-8-62	72	49				2.7 0.12	1.0 0.02				0.2 0.01			0.09			23	19		DWR
V. A. Rodden Ranch domestic and irrigation	3S/11E-9D1	8-16-62	71	285	8.1	22 1.11	10 0.94	21 0.90	3.6 0.09	0 0.00	117 1.91	15 0.32	22 0.63	7.8 0.13	0.1 0.01	0.00	57	224	31	98	2	USACL
H. E. Ketcham Irrigation	3S/12E-26F1	8-10-62	72	4,000	7.4	313 15.58	41 3.43	410 17.83	28 0.74	0 0.00	75 1.23	4.8 0.10	1,294 36.50	0.0 0.00	0.1 0.01	0.10	56	2,730	48	951	889	USACL

a. Determined by addition of constituents.
b. Gravimetric determination unless otherwise noted.
c. Analysis by D.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million equivalents per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm	
											STANISLAUS COUNTY (continued)													
West Stanislaus I.D. irrigation	4S/7E-16E1	7-18-62	67	1,830	8.2	88 4.39	67 5.54	206 8.96	1.5 0.04	0 0.00	220 3.60	295 6.14	319 9.00	26 0.12	0.5 0.03	3.30	22		47	497	317	DWR		
West Stanislaus I.D. irrigation	4S/7E-17K1	7-18-62	66	1,640				152 6.61	1.6 0.04				292 8.23			2.50			41	480		DWR		
West Stanislaus I.D. irrigation	4S/7E-18A1	7-18-62	67	1,680				175 7.61	1.6 0.04				282 7.95			2.70			45	462		DWR		
W. W. Cox irrigation	4S/7E-26R	7-24-62	66	1,370				77 3.35	1.2 0.05				174 4.91			0.66			22	593		DWR		
F. Cox irrigation	4S/7E-34J1	7-18-62	69	1,360				95 4.13	2.1 0.09				242 6.82			0.54			29	493		DWR		
Modesto I.D. irrigation	4S/8E-5L1	7-18-62	67	774	8.2	47 2.34	11 0.88	105 4.57	3.7 0.09	0 0.00	238 3.90	30 0.62	111 3.13	12 0.19	0.1 0.01	0.24	53		58	161	0	DWR		
Turlock I.D. drainage	4S/8E-24A1	8-16-62	67	1,70				46 2.00	2.4 0.06				28 0.79			0.17			43	130		DWR		
Turlock I.D. drainage	4S/8E-27L1	8-27-62	67	1,470				218 9.18	4.3 0.11				44 11.67			0.35			70	193		DWR		
Turlock I.D. drainage	4S/7E-20A1	8-16-62	67	550				52 2.26	3.3 0.08				42 1.18			0.16		ABS 0.00	41	160		DWR		
Turlock I.D. drainage	4S/9E-25A1	8-24-62	68	438				35 1.52	2.5 0.06				20 0.56			0.14		ABS 0.00	35	140		DWR		
Turlock I.D. drainage	4S/9E-30R1	8-27-62	66	645	7.9	52 2.59	13 1.05	73 3.17	3.2 0.08	0 0.00	304 4.99	17 0.36	37 1.05	21 0.34	0.1 0.01	0.20	34		46	182	0	USACL		
Johnson Bros. irrigation	4S/10E-1D1	8-16-62	70	398				41 1.78	6.6 0.17				61 1.72			0.32			118	89		DWR		
J. W. Short irrigation	4S/11E-5M1	8-24-62	78	600	8.2	31 1.57	6.1 0.50	82 3.55	7.2 0.18	0 0.00	148 2.13	11 0.22	117 3.29	0.0 0.00	0.2 0.01	0.20	54		64	104	0	USACL		
Turlock I.D. drainage	4S/11E-21D1	8-16-62	68	218				18 0.78	4.5 0.12				3.1 0.09			0.09			34	68		DWR		
Turlock I.D. drainage	4S/11E-31E1	8-24-62	68	383				30 1.30	2.3 0.06				2.2 0.26			0.17			33	127		DWR		
H. O. Wood irrigation	5S/7E-1M1	7-18-62	64	1,320				74 3.22	2.1 0.05				187 5.27			0.74			22	552		DWR		

a. Determined by addition of constituents.

b. Gravimetric determination unless otherwise noted.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as O.D. except as shown.

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																		Other constituents	Total ppm		N.C. ppm
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						
STANISLAUS COUNTY (continued)																					
H. Raines irrigation	5S/7E-2R1	7-18-62	72	1,550		164 7.13	2.1 0.05					235 4.85	277 7.81			0.60		46	417	DMR	
C. Zacharias irrigation	5S/7E-23B1	7-18-62	71	1,360	8.3	71 3.54	66 5.41	118 5.13	3.6 0.09	0	192 3.15	263 5.48	189 5.33	10 0.16	0.1 0.01	0.42	30	36	448	DMR	
State of California domestic	5S/7E-35A1	7-24-62	74	869	8.3	46 2.30	29 2.42	56 4.18	1.3 0.03	8 0.27	208 3.41	99 2.06	104 2.93	11 0.18	1.3 0.07	0.00	30	47	236	USGS	
Turlock I.D. drainage	5S/8E-1R1	8-28-62	68	920		133 5.78	4.0 0.10						153 4.31			0.31		64	156	DMR	
T & T Ranch irrigation	5S/8E-8G1	8-15-62	69	1,700	8.2	76 3.79	97 7.56	163 7.10	2.5 0.06	0	378 6.20	360 7.50	177 5.00	24 0.39	0.2 0.01	0.70	27	37	588	USACL	
R. L. Davis domestic and irrigation	5S/8E-27M1	8-15-62	74	1,240	8.2	92 4.58	56 4.04	126 5.47	2.1 0.05	0	210 3.15	506 10.94	39 1.10	10 0.16	0.4 0.02	0.40	22	37	461	USACL	
Turlock I.D. drainage	5S/9E-9A1	8-28-62	65	549		55 2.39	1.7 0.04						25 0.70			0.14		41	173	DMR	
Turlock I.D. drainage	5S/9E-13G1	8-22-62	66	611		54 2.35	2.6 0.07						27 0.76			0.17		36	206	DMR	
E. Cristoferson domestic and industrial	5S/10E-23E1	7-13-62	96	598	8.3	59 2.94	15 1.22	51 2.22	4.4 0.11	0	202 3.31	59 1.23	49 1.38	35 0.56	0.2 0.01	0.10	46	34	208	DMR	
Turlock I.D. drainage	5S/10E-28H1	8-20-62	67	466	8.1	36 1.80	11 0.88	48 2.09	2.0 0.05	0	215 3.52	11 0.23	18 0.51	28 0.45	0.3 0.02	0.10	53	43	134	0	
Turlock I.D. drainage	5S/10E-30F1	8-22-62	66	852		116 5.05	2.6 0.07						42 1.18			0.21		56	198	DMR	
Turlock I.D. drainage	5S/11E-7P1	8-20-62	66	494		33 1.44	1.9 0.05						12 0.34			0.12		25	175	DMR	
R. Perkins irrigation	5S/12E-6D1	8-22-62	69	192		20 0.87	3.1 0.08						7.7 0.22			0.08		45	50	DMR	
J. W. Campbell irrigation	6S/9E-18F1	7-6-62	59	589	8.3	43 2.15	30 2.47	41 1.78	1.7 0.04	3 0.10	252 4.13	78 1.62	14 0.39	12 0.19	0.1 0.01	0.00	22	28	231	USGS	
Central Calif. I.D. irrigation	7S/8E-12P1	7-6-62		1,000		68 2.96	2.3 0.06						85 2.40			0.35		28	386	DMR	

a. Determined by addition of constituents.
b. Gravimetric determination unless otherwise noted.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DMR) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						equivalents per million												Total ppm	N.C. ppm			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Barium (Ba)	Silica (SiO ₂)
Simon Newman Co. irrigation Central Calif. I.D. irrigation	7S/8F-13F1	7-6-62		1,050				24 4.09	2.2 0.06				105 2.96			0.57			37	348		DWR
	7S/8F-23R1	7-6-62		1,540	8.0	89 4.44	54 4.41	148 6.44	3.2 0.08	0 0.00	227 3.72	124 2.58	319 9.00	2.3 0.15	0.3 0.02	0.45 0.02	30	ABS 0.00	1,010	443	257	DWR

STANISLAUS COUNTY (continued)

a. Determined by addition of constituents.
b. Gravimetric determination unless otherwise noted.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.), State Department of Water Resources (DWR) as indicated.
d. Constituents shown in parentheses (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.0 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos/cm at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)			Silica (SiO ₂)	Other constituents		Total ppm
						MERCED COUNTY															
J. Bonaco domestic	4S/14E-8J	7-10-62	74	226	7.8	21 1.05	5.2 0.43	17 0.74	0.8 0.02	96 1.57	3.0 0.06	12 0.34	15 0.24	0.3 0.02	0.03	71	204	33	74	0	DWR
Turlock Irr. Dist. drainage	5S/11E-29F1	8-20-62	67	295	8.2	23 1.17	8.3 0.68	26 1.13	1.4 0.04	130 2.13	10 0.21	8.2 0.23	24 0.38	0.1 0.01	0.00	54	226	37	93	0	USACL
W. Batterman irrigation	5S/12E-32F1	7-10-62	72	157				15 0.65	3.8 0.10			8.7 0.24			0.19			42	39		DWR
Merced County domestic	5S/14E-3P	7-10-62	72	102	6.8	12 0.60	3.2 0.26	3.0 0.13	0.5 0.01	51 0.84	4.1 0.08	1.8 0.05	0.6 0.01	0.1 0.00	0.12	21	80	13	43	1	DWR
Turlock Irr. Dist. drainage	6S/10E-2H1	8-22-62	66	452				24 1.43	2.5 0.06			17 0.48			0.14			30	167		DWR
Turlock Irr. Dist. drainage	6S/10E-9B1	8-22-62	66	689				79 3.44	3.7 0.09			47 1.32			0.18			48	183		DWR
Turlock Irr. Dist. drainage	6S/10E-24L1	8-22-62	67	427				27 2.48	2.2 0.06			24 0.68			0.19			57	92		DWR
Riverside School drainage	6S/10E-28K1	8-20-62	66	660	8.4	34 1.68	7.4 0.62	108 4.70	2.0 0.05	274 4.50	19 0.40	60 1.70	10 0.15	0.1 0.01	0.10	31	396	67	115	0	USACL
Turlock Irr. Dist. drainage	6S/11E-3B1	8-16-62	66	605	8.3	51 2.54	13 1.05	63 2.75	1.8 0.05	196 3.22	54 1.12	28 0.80	54 0.86	0.2 0.01	0.10	56	416	43	180	5	USACL
Turlock Irr. Dist. drainage	6S/11E-3C1	8-24-62	67	470	8.2	47 2.35	8.5 0.70	40 1.75	2.4 0.06	176 2.88	37 0.76	16 0.45	45 0.74	0.1 0.01	0.10	45	356	36	153	9	USACL
Merced Irr. Dist. irrigation	6S/11E-27K1	6-25-62	68	241				23 1.00	4.0 0.10			6.7 0.19			0.14	ABS 0.00		43	61		DWR
Merced Irr. Dist. irrigation	6S/11E-36F1	6-20-62	67	288				25 1.09	2.8 0.07			6.7 0.19			0.11			38	86		DWR
Turlock Irr. Dist. drainage	6S/12E-6L1	9-10-62	68	460	8.0	43 2.13	8.5 0.70	41 1.80	1.7 0.04	148 2.45	32 0.66	21 0.55	54 0.87	0.1 0.01	0.10	46	304	39	142	20	USACL
Merced Irr. Dist. irrigation	6S/12E-21N1	6-20-62	68	216	8.1	17 0.85	3.5 0.29	22 0.95	6.3 0.16	164 2.68	13 0.26	1.8 0.05	9.0 0.15	0.1 0.01	0.00	48	170	43	56	0	USACL
Custine Drainage Dist. irrigation	7S/9E-32H1	7-6-62		930	8.1	56 2.79	36 2.94	89 3.87	1.5 0.04	204 3.34	213 4.43	58 1.64	10 0.16	0.3 0.02	0.54	31	602	40	287	120	DWR
C. Fawcett irrigation	7S/10E-7N1	7-9-62		928				169 7.35	2.5 0.06			110 3.10			0.21			79	97		DWR

a. Determined by addition of constituents.
b. Gravimetric determination unless otherwise noted.
c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.10 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million — equivalents per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d
						MERCED COUNTY (continued)															
Merced Irr. Dist. irrigation	7S/11E-4M1	7-2-62	67	507	8.3	71 3.09	5.7 0.14	27 1.17	0	160 2.62	7.7 0.16	19 0.54	10 0.16	0.1	0.17			58	103	DWR	
Merced Irr. Dist. irrigation	7S/12E-1Q1	8-2-62	67	361		27 1.17	1.9 0.05					13 0.37			0.10	ABS 0.00	33	118	DWR		
Merced Irr. Dist. irrigation	7S/12E-19A1	6-27-62	67	310	8.3	22 0.95	7.5 0.62	22 0.95	3.7 0.09	160 2.62	7.7 0.16	14 0.39	10 0.16	0.1	0.00	51		216	29	114	USACL
Merced Irr. Dist. irrigation	7S/13E-4P1	7-30-62	67	330	8.6	27 1.17	7.9 0.65	27 1.17	3.3 0.08	147 2.42	6.7 0.14	11 0.30	18 0.29	0.1	0.00	60	ABS 0.00	270	34	110	USACL
Merced Irr. Dist. irrigation	7S/13E-22C1	7-16-62	68	408		21 0.91	3.2 0.08	21 0.91	3.2 0.08			2.9 0.28			0.10			21	164	DWR	
Merced Irr. Dist. irrigation	7S/14E-9R1	7-26-62	69	260	8.2	22 0.95	8.9 0.73	22 0.95	2.5 0.06	131 2.15	3.4 0.07	11 0.30	2.5 0.1	0.1	0.00	48		184	35	85	USACL
Merced Irr. Dist. irrigation	7S/14E-28J1	9-6-62	67	435	8.1	38 1.63	18 1.46	38 1.65	2.6 0.07	260 4.27	10 0.21	6.0 0.17	3.3 0.05	0.1	0.10	47		276	34	155	USACL
Merced Irr. Dist. irrigation	7S/14E-31M1	6-25-62	66	460	8.5	21 1.00	21 1.70	21 1.00	4.2 0.11	218 3.57	14 0.29	20 0.55	6.2 0.10	0.1	0.10	59	ABS 0.00	326	43	135	USACL
Merced Irr. Dist. irrigation	7S/15E-18K1	7-26-62	70	284		18 0.78	5.6 0.14	18 0.78	5.6 0.14			7.9 0.22			0.10			25	107	DWR	
Merced Irr. Dist. irrigation	7S/15E-30E1	9-6-62	67	848		59 2.57	2.4 0.06	59 2.57	2.4 0.06			13 0.37			0.10			27	339	DWR	
Lone Tree Cattle Co. domestic	8S/9E-2P	11-19-62	68	970	8.4	97 4.20	30 2.53	97 4.20	2.0 0.05	173 2.84	24.7 5.14	78 2.20	11 0.18	0.1	0.50	21	ABS 0.00	690	40	316	USACL
Gustine Drainage Dist. irrigation	8S/9E-16E1	7-9-62	952			97 4.22	1.3 0.03	97 4.22	1.3 0.03			89 2.51			0.84			44	272	DWR	
F. Harrison irrigation	8S/10E-29D	7-11-62	76	2360	8.1	72 3.59	25 2.06	72 3.59	3.0 0.08	160 2.62	59.7 12.13	304 8.57	1.8 0.03	0.4	2.90	30		1570	75	283	DWR
W. P. Roduner domestic	8S/13E-16R	11-20-62	69	430	8.6	48 2.10	21 1.73	48 2.10	0.6 0.02	197 3.24	11 0.23	23 0.65	3.6 0.06	0.1	0.10	52	ABS 0.00	310	45	125	USACL
Merced Irr. Dist. irrigation	8S/14E-2D1	7-23-62	69	318		30 1.30	2.7 0.07	30 1.30	2.7 0.07			7.7 0.22			0.10			40	93	DWR	
Merced Irr. Dist. irrigation	8S/14E-24A1	7-17-62	68	387		23 1.00	6.6 0.17	23 1.00	6.6 0.17			3.2 0.09			0.09			24	148	DWR	

a. Determined by addition of constituents.

b. Gravimetric determination unless otherwise noted.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.0 except as shown.

1962

a. Determined by addition of constituents.
b. Gravimetric determination unless otherwise noted.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.O.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in F	Specific conductance (micro-mhos at 25 C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c
						equivalents per million												Silica (SiO ₂)	Other constituents	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)					
						MERCED COUNTY (continued)														
San Luis Canal Co. irrigation	108/12E-25L	7-4-62		690		63 3.14	53 4.34	82 3.57	1.6 0.04	0	120 1.97	120 2.50	510 14.39	3.4 0.05	0.0 0.00	0.18	55	144	DWR	
Central California Irrigation District domestic and irrigation	108/12E-27K1	7-6-62		1,760				216 9.40	2.9 0.07				109 3.07			0.15	56	370	DWR	
Central California Irrigation District irrigation	108/12E-35K1	7-6-62		2,000	8.1			278 12.09	4.8 0.12	0 0.00	120 1.97	120 2.50	510 14.39	3.4 0.05	0.0 0.00	0.70	61	374	USGS	
Ewing Farms irrigation	108/13E-1A1	7-7-62		529				34 1.48	4.3 0.11				36 1.02		0.09		28	180	DWR	
R. Lindemann irrigation	118/10E-23K1	7-9-62		4,620	8.1	258 12.67	208 17.13	500 21.75	2.0 0.23	0 0.00	148 2.43	1,020 21.24	875 24.68	97 1.56	0.0 0.00	2.00	42	1500	USGS	

a. Determined by addition of constituents.

b. Gravimetric determination unless otherwise noted.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as O₂ except as shown.

0.00

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						equivalents per million												Total ppm	N.C. ppm				
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ride (NO ₃)	Fluo-ride (F)						Boron (B)	Silico (SiO ₂)	Other constituents
									MADEIRA COUNTY														
R. Jessup irrigation	9S/15E-24F1	8-3-62	72	216				15 0.65	2.2 0.06				18 0.51				0.06	ABS 0.00		30	73	DWR	
City of Chowchilla municipal	9S/16E-30C1	6-19-62	71	197	7.9	14 0.70	5.8 0.48	16 0.70	2.8 0.07	0 0.00	80 1.31	1.2 0.02	18 0.51	1.8 0.03	0.1 0.00		0.06	Zn 0.01	169 ^a	36	59	0	DWR
L. Baker irrigation	9S/16E-35N1	8-3-62	71	276				22 0.96	1.7 0.04				24 0.68			0.07	ABS 0.00		35	86	DWR		
Red Top Ranch irrigation	10S/14E-88L	6-19-62	69	448	7.7	36 1.80	10 0.86	36 1.57	3.2 0.10	0 0.00	187 3.06	5.1 0.11	33 0.93	15 0.24	0.1 0.00		0.07	Pb 0.01 Zn 0.01	299 ^a	36	133	0	DWR
E. Hughes irrigation	10S/14E-24B1	8-12-62	70	802				50 2.18	4.2 0.11				136 3.84			0.04			29	261	DWR		
H. Probert irrigation	10S/15E-31A1	6-21-62	69	707				41 1.78	5.0 0.13				111 3.13			0.08			26	249	DWR		
J. Lillas irrigation	10S/16E-24H1	6-21-62	71	243				16 0.70	2.3 0.06				12 0.34			0.10			30	80	DWR		
W. Haynes irrigation	10S/16E-30K1	6-21-62	71	351				26 1.13	2.4 0.06				23 0.65			0.08			32	118	DWR		
Madera Country Club domestic and irrigation	10S/17E-25N1	6-19-62	74	230	7.8	16 0.80	7.3 0.60	18 0.78	2.7 0.07	0 0.00	84 1.38	6.4 0.13	16 0.45	14 0.22	0.2 0.01		0.08	As 0.00 Al 0.02 Pb 0.01 Zn 0.01	35	70	1	DWR	
Red Top Ranch irrigation	11S/14E-1A1	6-19-62	73	933	7.6	90 4.49	22 1.84	59 2.57	5.4 0.14	0 0.00	290 4.75	23 0.48	131 3.69	2.3 0.04	0.2 0.01		0.08	Fe 0.02 Al 0.07 Cu 0.02 Zn 0.04	28	317	79	DWR	
G. Turnbrow Ent. irrigation	11S/14E-5B1	6-21-62	68	606				33 1.44	3.5 0.09				123 3.47			0.05			26	198	DWR		
G. Turnbrow Ent. irrigation	11S/14E-16A1	6-21-62	69	590	8.1			36 1.57	3.6 0.09				104 2.93			0.10			28	196	DWR		
H. Shein irrigation	11S/15E-23L1	8-12-62	68	407				29 1.26	2.8 0.07				21 0.59			0.08			30	140	DWR		

a. Determined by addition of constituents.
b. Gravimetric determination unless otherwise noted.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.O.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium (b)	Hardness as CaCO ₃		Analyzed by c		
						equivalents per million												Silica (SiO ₂)	Other constituents ^d		Total ppm	N.C. ppm
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)							
						MADERA COUNTY (continued)																
Red Top Ranch Irrigation	11S/15E-29H1	6-21-62	69	436		35 1.52	2.7 0.07						36 1.02			0.07			34	142	DWR	
L. Peatman Irrigation	11S/16E-22K1	8-12-62	70	408	8.4	29 1.26	4.1 0.10	8 0.27	172 2.84	7.0 0.15			29 0.82	14 0.23	0.0 0.00	0.00	81		304	150	USGS	
City of Madera municipal	11S/17E-25B1	6-19-62	71	197	7.8	18 0.78	3.3 0.08	0 0.00	80 1.31	1.6 0.03			16 0.45	1.0 0.02	0.1 0.00	0.07	68	ABS 0.00 Fe 0.02 Al 0.31 Zn 0.53	166 ^a	52	DWR	
W. Jay domestic	11S/18E-20E1	6-21-62	78	209		18 0.78	4.4 0.11						16 0.45			0.07			38	57	DWR	
G. Houk Ranch Irrigation	12S/14E-10N1	7-12-62	67	2,820	7.8	253 10.83	2.9 2.42	7.0 0.18	0 0.00	125 2.05	220 4.58		272 21.80	2.2 0.04	0.2 0.01	0.22	66		1,790	663	DWR	
G. Houk Ranch Irrigation	12S/14E-16K1	6-20-62	68	788	8.1	150 6.52	1.7 0.14	0 0.00	161 2.64	67 1.39			114 3.21	0.5 0.01	0.2 0.01	0.35	60	Fe 0.11 Ar 0.01 Zn 0.01	484 ^a	31	DWR	
Red Top Ranch Irrigation	12S/15E-4K1	6-21-62	69	497	8.0	35 1.52	1.4 1.13	2.7 0.09	0 0.00	126 2.23	11 0.23		75 2.12	1.8 0.03	0.2 0.01	0.06	70	Al 0.05 As 0.01	317 ^a	154	DWR	
Red Top Ranch Irrigation	12S/15E-22F1	6-21-62	69	331		32 1.39	1.8 0.05						25 0.70			0.06			42	93	DWR	
W. Gill Irrigation	12S/15E-27G1	6-22-62	69	366		27 1.61	2.2 0.06						22 0.90			0.07			44	97	DWR	
G. Weer Irrigation	12S/17E-5H1	8-13-62	68	198		17 0.74	2.3 0.08						17 0.48			0.06			38	56	DWR	
S. Thomas Irrigation	12S/17E-7F1	6-22-62	69	464		33 1.44	4.2 0.12						28 0.79			0.11			38	113	DWR	
Libbies Ranch Irrigation	12S/17E-24A1	6-22-62	68	246		16 0.70	4.0 0.10						13 0.37			0.13			29	80	DWR	
Mordcaul Irrigation	12S/18E-7L1	6-22-62	68	205		15 0.65	4.0 0.10						10 0.28			0.10			23	104	DWR	

a. Determined by addition of constituents.
b. Gravimetric determination unless otherwise noted.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ride (NO ₃)	Fluo-ride (F)			Boron (B)	Silico (SiO ₂)		Other constituents ^d	Total ppm
								MADERA COUNTY (continued)														
Iverson and Carlton irrigation	12S/18E-14J1	6-19-62	72	271	7.8	18 0.90	7.8 0.64	20 0.87	3.6 0.09	0 0.00	76 1.24	8.2 0.17	25 0.70	19 0.31	0.2 0.01	0.08	78	Fe 0.01 Al 0.06 Zn 0.04	217 ^a	35	77	DWR
Columbia Canal Co. irrigation	13S/15E-22J1	7-10-62		205	8.2	1.8 0.09	0.1 0.01	46 2.00	1.1 0.03	0 0.00	110 1.80	2.0 0.06	12 0.34	0.7 0.01	0.2 0.01	0.00	43		165	94	5	USGS
Columbia Canal Co. irrigation	13S/15E-25C1	7-10-62		230				49 2.13	0.6 0.02				18 0.51			0.10				95	5	DWR
K. Seibert irrigation	13S/16E-20C1	6-21-62	69	351				30 1.30	2.0 0.05				18 0.51			0.08				36	114	DWR
G. Roberts irrigation	13S/17E-5F1	6-19-62	78	794	8.2	87 4.34	19 1.57	55 2.39	2.8 0.07	0 0.00	342 5.60	40 0.83	52 1.47	23 0.37	0.1 0.00	0.18	72	Fe 0.02 Al 0.06 Cu 0.01 Pb 0.01 Zn 0.12	519 ^a	28	296	DWR

a. Determined by addition of constituents.
b. Gravimetric determination unless otherwise noted.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.). U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\mu\text{g/l}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Barium (Ba)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm	
Don Pulos Drainage District drainage Central California Irrigation District irrigation Miller and Lux Irrigation	11S/12E-13N	7-6-62		1,770	8.1	80 3.99	65 5.31	188 8.18	4.0 0.10	0 0.00	210 3.44	116 2.42	402 11.34	3.1 0.05	0.0 0.00	0.20	34		1,190	47	465	293	USGS	
	11S/13E-17E1	7-6-62		1,310				192 8.35	2.9 0.07				272 7.67							67	198		DMR	
	11S/13E-36B1	7-6-62		1,190				192 8.35	1.7 0.04				235 6.63			0.30				76	129		DMR	
	12S/12E-30W1	7-31-62	81		1,540	8.4	36 1.86	35 2.84	254 11.05	2.1 0.05	12 0.40	182 2.93	462 9.62	82 2.31	1.1 0.02	0.3 0.02	2.40	35		1,050	70	232	63	USGS
	12S/13E-9C1	7-16-62		3,870				573 24.92	3.2 0.08					497 14.02			5.60				62	754		DMR
Redfern Ranches Irrigation J. G. Indart Irrigation Pinedale Water Company municipal B. Barber Irrigation irrigation	12S/14E-29B1	7-6-62		1,160				152 6.61	2.9 0.07				203 5.72			0.46				62	200		DMR	
	12S/20E-32N1	6-22-62	78	227	7.9	19 0.95	7.7 0.63	15 0.65	4.1 0.10	0 0.00	108 1.77	2.3 0.05	2.1 0.26	12 0.19	0.2 0.01	0.07	63	Fe 0.02, Al 0.03, Zn 0.04	189 ^a	28	79	0	DMR	
	12S/21E-31F1	6-18-62	83	298	8.1	22 1.10	11 0.92	12 0.52	2.0 0.05	0 0.00	126 2.66	12 0.25	4.2 0.12	7.0 0.11	0.2 0.01	0.07	48		180 ^a	20	101	0	DMR	
	13S/14E-15B1	4-25-62	77	2,320	8.1	36 1.86	2.0 0.20	497 21.60	2.0 0.05	0 0.00	207 3.40	591 12.31	270 7.60	0.0 0.00	0.5 0.03	1.12	43		1,620	91	100	0	DMR	
		6-20-62	77															Fe 0.15, Al 0.03, As 0.02, Mn 0.14, Zn 0.04, Pb 0.01						DMR
domestic and irrigation Locke Brothers Irrigation Kenneson Irrigation G. Weisner Irrigation	13S/14E-34W1	4-26-62	72	4,420	7.9	207 10.35	183 15.09	593 25.80	14 0.36	0 0.00	228 3.73	1,117 29.50	672 18.91	8.0 0.14	0.4 0.02	0.50	24		3,150	50	1,272	1,035	DMR	
	13S/15E-18L1	7-6-62		426	8.1	14 0.70	4.6 0.38	68 2.96	2.0 0.05	0 0.00	119 1.95	31 0.65	54 1.52	1.1 0.02	0.5 0.03	0.10	41		273	72	54	0	USGS	
	13S/17E-29L1	6-20-62	67	725				67 2.91	5.6 0.14				76 2.14			0.13				40	209		DMR	
	13S/19E-30L1	8-2-62	71	257				17 0.74	4.1 0.10				2.1 0.26			0.07				28	257		DMR	

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b. Gravimetric determination unless otherwise noted.
c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DMR) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as U.S. except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

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						equivalents per million												Total ppm	N.C. ppm				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)	Silica (SiO ₂)	Other constituents ^d
						FRESNO COUNTY (continued)																	
Fresno St. College domestic	135/20E-12L1	4-27-62	70	264	8.2	24 1.20	12 1.01	14 0.60	2.0 0.06	0 0.00	160 2.61	0.0 0.00	8.0 0.21	0.0 0.00	0.5 0.02	0.06	27	ABS 0.00	200	21	0	DWR	
City of Fresno municipal	135/20E-27J1	6-19-62	71	243				15 0.65	4.1 0.10				4.8 0.14			0.07		ABS 0.00		29	75	DWR	
Henderson Nursery irrigation	135/21E-15N2	4-26-62	70	238	8.1	2.0 0.14	7.0 0.56	16 0.70	2.0 0.05	0 0.00	81 1.33	7.0 0.15	7.0 0.20	4.0 0.06	0.2 0.01	0.02	22	ABS 0.00	150	40	0	DWR	
S. Gibbs irrigation	135/21E-33K1	6-22-62	69	242	8.1	21 1.05	10 0.85	13 0.56	1.8 0.05	0 0.00	113 1.85	11 0.23	3.8 0.11	16 0.26	0.1 0.00	0.04	57	Al 0.04, Zn 0.04	190	22	2	DWR	
O. Delerio irrigation	135/22E-28C2	6-20-62	69	428	8.4	23 1.15	27 2.23	20 0.87	2.6 0.07	3 0.10	195 3.20	9.5 0.20	18 0.51	23 0.37	0.1 0.00	0.06	43		265	20	4	DWR	
Billings irrigation	135/23E-30J1	6-20-62	68	218	8.0	13 0.65	6.2 0.51	24 1.04	3.2 0.08	0 0.00	106 1.74	6.2 0.13	6.7 0.19	8.8 0.14	0.4 0.02	0.04	55		176	46	0	DWR	
Pappas Co. irrigation	145/13E-12N1	4-26-62	81	1,240	8.3	20 1.01	5.0 0.42	267 11.60	5.0 0.12	0 0.00	265 4.35	292 6.08	82 2.30	1.0 0.01	0.4 0.02	0.93	50		900	88	0	DWR	
Employees Enterprises irrigation	145/13E-21N1	6-19-62	91	1,760				298 12.96	2.7 0.07			612 12.74	76 2.14			1.80				75	208	DWR	
Filibos Bros. irrigation	145/13E-25N1	4-26-62	87	2,610				384 16.70	3.6 0.09			882 18.36	232 6.54			2.40				62	517	DWR	
Pappas & Co. irrigation	145/14E-9M1	4-26-62	78	3,910	7.8	275 13.72	134 10.98	317 13.80	16 0.42	0 0.00	248 4.06	861 17.93	584 16.45	4.0 0.06	0.2 0.01	1.72	56		2,590	35	1,210	1,010	DWR
Muriatta Farms irrigation	145/14E-33N1	7-31-62	86	1,570	8.3	34 1.70	15 1.26	300 13.05	2.9 0.07	8 0.27	178 2.92	490 10.20	75 2.12	2.5 0.04	0.6 0.03	1.70	46		1,080	81	148	0	USGS
Dept. Fish & Game State of California domestic	145/15E-28L1	6-20-62	80	1,460	8.1	32 1.60	63 0.52	266 11.57	3.7 0.09	0 0.00	181 2.97	442 9.20	74 2.09	1.1 0.02	0.3 0.02	1.40	71	Fe 0.26, Al 0.05, Mn 0.33, Zn 0.10	987	84	106	0	DWR
Gilmore Land Co. irrigation	145/16E-36A1	6-20-62	72	1,160	8.4	6.6 0.33	0.6 0.05	235 10.22	2.8 0.07	2 0.07	206 3.38	2.0 0.04	250 7.05	0.4 0.01	0.5 0.03	1.60	54	Fe 0.08, Al 0.07, Mn 0.01, As 0.02	656	96	19	0	DWR
C. Peer irrigation	145/17E-13H1	6-20-62	71	457	8.2	41 2.04	16 1.32	22 0.96	5.5 0.14	0 0.00	150 2.46	19 0.40	48 1.35	13 0.21	0.2 0.01	0.07	78		317	22	168	45	DWR
J. Anderson irrigation	145/18E-26N1	7-30-62	70	857	8.1	38 1.90	59 4.86	57 2.48	6.5 0.17	0 0.00	5.05 5.05	31 0.65	105 2.96	27 0.44	0.1 0.01	0.00	71		567	26	338	85	USGS
L. Haun irrigation	145/19E-7M1	6-20-62	71	496	8.4	42 2.10	21 1.74	28 1.22	6.6 0.17	4 0.13	263 4.31	8.4 0.17	15 0.42	11 0.16	0.1 0.01	0.11	77		342	23	192	0	DWR

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as U.O., except as shown.

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						equivalents per million												Total ppm	N.C. ppm			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Polysulfate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)	Silica (SiO ₂)
FRESNO COUNTY (continued)																						
F. Errico domestic	14S/19E-14P1	10-24-62	68	290	7.9	13 0.65	7.8 0.64	30 1.30	2.5 0.06	0 0.00	101 1.65	20 0.42	7.1 0.20	20 0.32	0.1 0.01	0.00	34	182	49	65	0	USACL
P. Romart irrigation	14S/19E-22R1	7-30-62	69	548	8.3	21 1.05	28 2.27	47 2.04	6.5 0.17	0 0.00	219 3.59	19 0.40	4.1 1.16	21 0.34	0.1 0.01	0.06	13	356	37	166	0	DMR
City of Fresno municipal	14S/20E-21I	6-20-62	73	428	8.4	32 1.60	18 1.50	26 1.13	5.4 0.14	1 0.03	204 3.34	11 0.23	15 0.42	20 0.32	0.2 0.01	0.08	50	279 ^a	26	155	0	DMR
C. Fore irrigation	14S/20E-27C1	6-19-62	67	870				89 3.87	4.7 0.12				39 1.10			0.11			40	287		DMR
O. W. Leeban irrigation	14S/21E-12P1	6-20-62	69	732	8.3	50 2.50	44 3.63	26 1.57	3.6 0.09	2 0.07	298 4.88	81 1.69	30 0.85	20 0.32	0.1 0.01	0.06	56	469 ^a	20	307	59	DMR
City of Sanger domestic	14S/22E-25P1	8-15-62	74	314	8.4	30 1.50	7.5 0.62	27 1.17	2.0 0.05	3 0.10	180 2.95	3.8 0.08	4.4 0.12	0.3 0.01	0.1 0.01	0.24	23	196	35	106	0	DMR
F. Yearout irrigation	15S/14E-36Q2	7-31-62	88	1,640				274 11.92	1.9 0.05			564 11.74	86 2.42	2.1 0.03	0.3 0.02	2.20			82	130		DMR
Pucheu irrigation	15S/15E-20R2	9-20-62	74	1,740	8.2	138 6.89	89 7.29	130 5.66	4.7 0.12	0 0.00	195 3.20	703 14.84	75 2.12	2.1 0.03	0.3 0.02	0.98	46	1,280 ^a	28	710	550	DMR
Reece Bros. irrigation	15S/15E-25N1	7-31-62	72	3,270	8.0	236 11.78	163 13.42	348 15.14	6.0 0.15	0 0.00	175 2.87	1,420 31.02	184 5.19	1.7 0.03	0.1 0.01	1.60	33	2,860	37	11,260	1,120	USGS
James Irrigation District irrigation	15S/17E-10R1	6-20-62	72	2,920	7.6	196 9.78	40 3.33	295 12.83	15 0.38	0 0.00	102 1.67	15 0.31	856 24.14	4.7 0.08	0.2 0.01	0.23	64	1,540 ^a	49	656	572	DMR
James Irrigation District irrigation	15S/17E-34A1	6-20-62	72	470	8.2	5.4 0.27	0.1 0.01	91 3.96	2.9 0.07	0 0.00	149 2.44	26 0.54	50 1.41	0.0 0.00	0.6 0.03	0.53	57	306 ^a	92	14	0	DMR
James Irrigation District irrigation	15S/18E-16G1	7-30-62	74	349	8.3	25 1.25	6.0 0.49	38 1.65	7.2 0.18	5 0.17	144 2.36	4.0 0.08	25 0.71	13 0.21	0.0 0.00	0.00	84	281	46	87	0	USGS
W. Anderson irrigation	15S/19E-35L1	6-19-62	75	862	8.2	68 3.39	8.4 0.69	98 4.26	5.4 0.14	0 0.00	240 3.93	55 1.14	86 2.42	56 0.90	0.0 0.00	0.14	22	524 ^a	50	204	7	DMR
P. G. & E. industrial	15S/21E-24L1	8-9-62	74	24	7.1	3.0 0.15	0.1 0.01	1.7 0.07	1.3 0.03	0 0.00	11 0.18	1.0 0.02	1.7 0.05	0.8 0.01	0.1 0.00	0.00	4.9	14	27	8	0	DMR

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b. Gravimetric determination unless otherwise noted.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DMR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.0 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
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1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Hardness as CaCO ₃		Analyzed by c	
						parts per million											Permeability (b)	Total ppm		N.C. ppm
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Boron (B)					
FRESNO COUNTY (continued)																				
J. E. Monson domestic and irrigation	15S/24E-23Q1	10-24-62	69	289	8.1	27 1.35	8.1 0.67	22 0.96	1.8 0.05	0 0.00	4.9 0.10	16 0.45	19 0.31	0.2 0.01	0.05	58		DMR		
W. Deal irrigation	16S/14E-10Q1	6-21-62	88	1,560	8.2	108 5.39	32 2.64	192 8.35	3.2 0.08	119 1.95	660 13.74	34 0.96	6.7 0.11	0.3 0.02	1.70	32	Fe 0.02, Pb 0.01, Al 0.03, Mn 0.21, As 0.01, Zn 0.06	DMR		
F. Yearout irrigation	16S/15E-8N1	6-19-62	79	1,460	8.2	89 4.44	72 5.93	133 5.78	3.0 0.08	0 0.00	247 11.39	60 1.69	1.4 0.02	0.2 0.01	0.74	25		DMR		
Vista Del Llano irrigation	16S/15E-25Q1	6-19-62	79	1,740	8.2	107 5.34	87 7.15	163 7.09	3.6 0.09	157 2.57	730 15.20	76 2.14	1.2 0.02	0.2 0.01	1.30	37		DMR		
Rabb Bros. irrigation	16S/16E-9N2	6-21-62	75	1,440	8.2	79 3.94	34 2.83	182 7.92	3.8 0.10	0 0.00	532 11.08	57 1.61	0.5 0.01	0.2 0.01	1.30	45	Fe 0.04, Mn 0.23, Al 0.01, As 0.01	DMR		
irrigation	16S/17E-10G	7-30-62	66	583	8.3	28 1.40	2.7 0.22	101 4.39	2.3 0.06	0 0.00	51 1.06	26 0.73	0.2 0.00	0.3 0.02	0.14	42	ABS 0.00	DMR		
C. Phillips domestic	16S/18E-10A1	6-19-62	73	185	8.0	10 0.50	0.7 0.06	26 1.13	3.2 0.08	0 0.00	3.8 0.08	4.0 0.11	1.1 0.02	0.3 0.02	0.03	42		DMR		
L. Mason irrigation	16S/21E-21F	7-30-62	69	228	8.2	22 1.10	0.5 0.04	26 1.13	2.6 0.07	0 0.00	8.0 0.17	12 0.34	12 0.19	0.1 0.01	0.00	33		USGS		
Vista Del Llano irrigation	17S/16E-18E1	6-19-62	88	1,450	7.9	32 1.60	8.0 0.66	258 11.22	1.3 0.03	0 0.00	434 9.04	107 3.02	2.0 0.03	0.8 0.04	1.90	24		DMR		
R. Deavenport irrigation	17S/17E-23Q1	6-21-62	76	1,290		172 7.48	1.9 0.05	172 7.48	1.9 0.05		470 9.78	48 1.35			0.73	59	Fe 0.01, Mn 0.09, Al 0.16, Zn 0.11	DMR		
H. Deavenport irrigation	17S/17E-27R1	4-25-62	76	1,310				163 7.09	1.8 0.05		500 10.43	48 1.35			0.78	55		DMR		
San Joaquin Cotton Co. industrial	17S/17E-28R1	4-25-62	76	3,000	7.9	202 15.06	84 6.88	322 14.00	2.0 0.05	0 0.00	1,460 30.51	177 5.01	23 0.36	0.6 0.03	1.04	21		DMR		
Errataberry irrigation	17S/18E-35Q1	6-19-62	71	1,440	8.4	56 2.79	9.4 0.77	258 11.22	1.4 0.04	2 0.07	387 8.06	83 2.34	0.2 0.00	0.8 0.04	1.60	20		DMR		
Harris Farms irrigation	18S/15E-24N1	4-25-62	94	2,400				377 16.40	4.0 0.10		806 16.78	221 6.23			2.60	67		DMR		

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

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1962

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						equivalents per million												Silica (SiO ₂)	Total ppm		N.C. ppm	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)							Boron (B)
FRESNO COUNTY (continued)																						
F. Diener irrigation	18S/17E-13M1	4-25-62	85	1,060	8.2	24 1.19	1.0 0.11	205 8.95	2.0 0.05	0	100 1.53	290 6.05	103 2.91	0.0 0.00	0.4 0.02	1.06	17	735	87	65	0	DNR
Benson irrigation	18S/17E-30P1	6-21-62	90	2,880	7.8	84 1.19	38 3.12	470 20.44	3.4 0.09	0	118 1.93	398 8.29	623 17.57	5.3 0.09	0.3 0.02	1.60	29	1,710 ^a	73	366	269	DNR
Giffen, Inc. irrigation	19S/17E-13M1	6-19-62	81	1,370	8.2	68 3.39	60 4.92	147 6.39	2.9 0.07	0	152 2.49	522 10.87	57 1.61	2.6 0.04	0.2 0.01	0.64	29	961 ^a	43	446	291	DNR
Boston Land Co. irrigation	19S/18E-23P2	8-16-62	77	1,590	7.7	91 1.54	38 3.09	206 8.96	2.2 0.05	0	101 1.66	595 12.18	77 2.17	3.2 0.05	0.2 0.01	0.80	22	1,150	54	382	299	USGS
Boston Land Co. irrigation	19S/18E-28P1	4-24-62	80	1,450	8.1	70 3.50	52 4.25	200 8.70	4.0 0.09	0	117 2.42	551 11.47	62 1.76	4.0 0.06	0.4 0.02	0.80	22	1,050	53	388	267	DNR
Allen irrigation	20S/15E-25P2	6-21-62	73	2,100	8.2	75 3.74	122 10.07	220 9.57	3.7 0.09	0	200 3.28	785 16.34	139 3.92	11 0.13	0.5 0.03	2.10	34	1,490 ^a	41	691	527	DNR
Shell Oil Company industrial	20S/16E-4P1	4-25-62	82	1,850																	DNR	
Giffen, Inc. irrigation	20S/17E-34L	6-19-62	74	2,320	8.1	193 9.63	167 13.75	258 11.22	5.2 0.13	0	133 2.18	1,330 27.69	141 3.93	72 1.16	0.3 0.02	0.92	27	2,260 ^a	32	1,170	1,060	DNR
P. Kuehen Ranch irrigation	20S/17E-11M1	4-25-62	78	1,490																	DNR	
V. Thomas Ranch domestic, stock and irrigation	20S/17E-36P1	4-25-62	76	1,270																	DNR	
	6-21-62 ^b		76																		DNR	
Boston Land Company irrigation	20S/18E-24M1	4-25-62	98	2,060	8.0	20 1.00	7.0 0.56	135 18.50	2.0 0.05	0	342 5.65	70 1.46	178 13.49	0.0 0.00	0.3 0.02	1.34	25	1,400	92	78	0	DNR

a. Determined by addition of constituents.

b. Gravimetric determination unless otherwise noted.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Aroclor (Aa), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.0 except as shown.

020

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million equivalents per million										Total dissolved solids in ppm (b)	Per cent total solidum	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm
TULARE COUNTY																							
R. Kallender irrigation	16S/24E-3J1	7-26-62	71	580	8.1	47 2.33	22 1.82	41 1.80	2.5 0.06	0 0.00	33 0.68	55 1.56	34 0.55	0.1 0.01	0.00	24	380	30	208	52	USACL		
California Growers Wineries industrial	16S/25E-32N	8-1-62	76	520	8.2	37 1.86	24 2.00	35 1.50	3.6 0.09	0 0.00	17 0.36	32 0.90	7.8 0.13	0.1 0.01	0.00	24	308	28	193	0	USACL		
J. Aguiav domestic	17S/23E-6H1	6-18-62	71	960	7.8	84 4.22	24 1.98	98 4.25	2.5 0.06	0 0.00	27 1.18	102 2.87	40 0.64	0.1 0.01	0.10	48	640	40	310	31	USACL		
R. E. Stapleton irrigation	17S/24E-15A2	6-21-62	70	480	8.3	40 2.00	17 1.39	31 1.35	3.0 0.08	4 0.14	21 0.44	34 0.94	14 0.23	0.1 0.01	0.10	24	308	28	170	12	USACL		
Yasuda Brothers irrigation and domestic	17S/25E-34P	7-3-62	76	530	8.2	42 2.11	19 1.62	41 1.80	3.4 0.09	0 0.00	22 0.60	40 1.12	18 0.29	0.1 0.01	0.00	44	380	32	187	5	USACL		
A. Castro domestic	18S/24E-19M1	6-18-62	74	222					0.4 0.01			4.5 0.13			0.10	ABS 0.00	60	46			DWR		
D. Shannon irrigation	18S/26E-10N	7-24-62	68	230	8.0	19 0.97	1.7 0.14	33 1.43	0.2 0.01	0 0.00	28 0.58	5.7 0.16	5.6 0.09	0.1 0.01	0.00	19	166	56	55	0	USACL		
Jinett Brothers domestic	19S/23E-24G1	6-18-62	73	229					0.5 0.01			4.9 0.14			0.10		27	87			DWR		
Pacific States irrigation	19S/24E-22C1	6-21-62	68	260	8.1	27 1.34	0.6 0.05	28 1.20	1.0 0.03	0 0.00	17 0.37	6.0 0.17	2.3 0.15	0.1 0.01	0.00	18	160	46	70	0	USACL		
J. Lewis domestic	19S/25E-3J1	6-18-62	74	222					0.0 0.02			1.2 0.54			0.10		16	101			DWR		
City of Exeter domestic	19S/26E-3K1	6-18-62	73	484					2.7 0.07			4.2 1.18			0.12	ABS 0.00	40	142			DWR		
R. Montgomery irrigation	19S/26E-26M1	6-18-62	74	510	8.2	20 0.98	12 1.03	77 3.35	1.9 0.05	0 0.00	23 0.48	62 1.74	19 0.31	0.1 0.01	0.10	16	312	62	101	0	USACL		
Harris and Cade irrigation	20S/23E-27P	7-24-62	70	611					2.3 0.06			21 0.59			0.08		37	190			DWR		
C. Pruner irrigation	20S/26E-3F1	8-14-62	74	1,920	8.2	87 4.34	85 7.02	152 6.61	5.8 0.15	0 0.00	20 0.42	238 15.18	15 0.24	0.1 0.01	0.20	32	1,230	36	568	463	USGS		
A. W. Furze irrigation	20S/26E-5R1	7-10-62	74	726					3.1 0.08			123 3.47			0.18		144	196			DWR		
H. O. Carr irrigation	20S/26E-13A1	9-12-62		1,150					5.3 0.14			234 6.60			0.16	ABS 0.00	344	350			DWR		

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b. Gravimetric determination unless otherwise noted.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Percent sodium	Hardness as CaCO ₃		Analyzed by c		
						equivalent per million												Fluoride (F)	Boron (B)		Silica (SiO ₂)	Other constituents ^d
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)									
TULARE COUNTY (Continued)																						
Rogers Farms & S. A. Camp irrigation	20S/26E-19F	6-25-62	72	441		26 1.30	18 1.16	43 1.87	3.2 0.08			35 0.99				44	117	DWR				
Jensen irrigation	20S/27E-31W1	8-14-62	74	491	8.4			47 2.04	3.2 0.10	5.0 0.17	21 0.44	36 1.02	37 0.60	0.0 0.00	0.00 0.00	0.16	31	42	138	2	USGS	
J. G. Boswell irrigation	21S/23E-22A	9-27-62	72	320	8.2	2.2 0.16	0.5 0.04	71 3.10	0.4 0.01	0 0.00	18 0.38	15 0.43	0.0 0.00	0.6 0.03	0.20 0.03	0.20	23	86	25	0	USACL	
J. Torres, Jr. irrigation	21S/24E-10W1	7-3-62	73	235	9.0	4.2 0.21	0.0 0.00	53 2.30	0.3 0.01	14 0.47	21 0.45	7.1 2.00	0.0 0.00	0.6 0.03	0.20 0.03	0.20	31	91	11	0	USACL	
W. Warrness domestic and irrigation	21S/27E-15F2	7-31-62	70	500	8.1	51 2.56	18 1.53	31 1.35	2.2 0.06	0 0.00	14 0.31	25 0.70	17 0.26	0.1 0.01	0.10	26	280	25	205	0	USACL	
City of Porterville industrial	21S/27E-27F1	8-14-62	70	619	8.3	47 2.34	7.0 0.58	66 2.87	7.2 0.18	0 0.00	31 0.64	19 1.38	10 0.64	0.8 0.04	0.70	42	413	48	146	0	DWR	
W. Murray irrigation	22S/23E-6A1	8-2-62	70	740	8.2	30 1.48	10 0.82	125 5.43	1.3 0.03	0 0.00	29 0.60	107 3.03	0.0 0.00	0.4 0.02	0.30	33	432	70	115	0	USACL	
J. G. Schott irrigation and domestic	22S/25E-22A	6-21-62	74	261				33 1.44	1.7 0.04			8.8 0.25			0.12		54	60			DWR	
Schenley Ranch irrigation	22S/26E-16W1	9-12-62	80	270	8.2	2.4 0.47	0.0 0.00	55 2.37	0.8 0.02	0 0.00	10 0.21	11 0.30	2.5 0.04	0.2 0.01	0.20	17	172	83	24	0	USACL	
J. Pemberton domestic	22S/27E-11C1	7-31-62	78	526				30 1.30	2.5 0.06			11 0.31			0.17		22	224			DWR	
G. C. Marshall irrigation	23S/23E-32W1	7-26-62	83	1,970				250 10.88	19 0.49			428 12.07			0.65		69	222			DWR	
J. Faris irrigation	23S/24E-32P	8-20-62	79	243				51 2.22	0.4 0.01			11 0.31			0.23		94	7.3			DWR	
T. Kirksey irrigation	23S/25E-9F1	7-26-62	73	263				32 1.39	0.4 0.01			20 0.56			0.12		54	58			DWR	
R. Burke irrigation	23S/27E-21H	9-12-62	94	582	8.1	2.0 0.45	0.0 0.00	123 5.35	1.5 0.04	0 0.00	48 1.01	17 2.18	0.8 0.01	0.8 0.04	0.60	33	356	92	23	0	USACL	
O. Clasen irrigation	23S/27E-27O1	9-12-62	80	585				46 4.38	2.8 0.07			31 0.87			0.19		74	70			DWR	
H. Mitchell irrigation	24S/23E-8D	7-26-62	79	540	8.3	20 0.98	3.2 0.26	100 4.35	3.3 0.08	1 0.04	31 0.64	72 2.03	0.0 0.00	0.8 0.04	0.30	35	364	77	62	0	USACL	

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b. Gravimetric determination unless otherwise noted.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn),

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						equivalents per million												Total ppm	N.C. ppm		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)						Boron (B)
TULARE COUNTY (continued)																					
M. Hall irrigation	24S/25E-23H1	9-12-62	74	410	8.0	42 2.12	7.4 0.61	34 1.47	2.2 0.06	0 0.00	132 2.16	38 0.79	23 0.65	46 0.74	0.1 0.01	0.00	31	35	137	29	USACTL
Schenley Ranch irrigation	24S/26E-31I2	9-12-62	79	270	8.1	7.2 0.36	0.0 0.00	55 2.40	0.8 0.02	0 0.00	104 1.70	20 0.42	20 0.55	2.9 0.05	0.4 0.02	0.10	23	86	18	0	USACTL
M. Gutlinich irrigation	24S/27E-32P1	9-12-62	84	458				96 4.18	1.9 0.05			30 0.85				0.35		94	12		DWR

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.0 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
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1962

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						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm
KINGS COUNTY																							
R. Hallsten domestic	17S/22E-2H	8-13-62		119			5.8 0.25	1.2 0.03					3.6 0.15			0.08			17	60	DNR		
Woods & Groggani irrigation	18S/19E-6H1	8-30-62	67	1,900	8.3	60 2.95	16 1.30	113 17.95	1.8 0.05	0	272 4.45	682 11.26	115 3.22	0.0 0.00	0.8 0.01	1.60	19		1,370	81	215	USACL	
D. Johns irrigation	18S/19E-26H1	8-15-62	68	173				103 1.15	0.5 0.01				26 0.73			0.82			96	10	DNR		
W. Verboon irrigation	18S/21E-14F1	8-29-62	63	293			20 0.37	1.1 0.03					14 0.39			0.65			29	103	DNR		
Wedeburn Bros. irrigation	19S/19E-15W1	8-15-62	78	1,370	8.4	51 2.57	6.4 0.53	275 11.95	1.9 0.05	8.4 0.28	214 4.00	352 7.33	118 3.33	2.9 0.05	0.4 0.02	1.70	35		900	79	155	USACL	
West Lake Farms irrigation	19S/19E-25L	8-21-62	78	1,050	9.1	8.4 0.42	1.2 0.10	252 11.00	1.3 0.03	50 1.66	163 3.59	0.0 0.00	74 2.10	0.0 0.00	0.2 0.01	1.30	15	ABS 0.00	688	95	26	USACL	
Serge domestic	19S/20E-33A1	9-14-62	78	557				121 5.26	1.0 0.02				30 0.85			1.80			96	10	DNR		
Musael Slough Farms irrigation	19S/21E-3B1	8-14-62	64	215	8.3	4.2 0.21	0.0 0.00	56 2.13	0.4 0.01	0	114 2.37	4.8 0.10	3.9 0.11	0.0 0.00	0.8 0.01	0.30	38		178	92	11	USACL	
Manzanillo Ranch stock & irrigation	19S/23E-8H1	8-16-62	71	152				28 1.22	0.5 0.01				5.6 0.16			0.11			81	14	DNR		
C. Orton irrigation	20S/20E-10L1	8-15-62	72	810	8.9	14 0.52	2.2 0.18	190 8.25	1.0 0.03	31 1.01	388 6.36	25 0.52	34 0.95	7.4 0.12	0.2 0.01	1.30	36	ABS 0.00	552	92	35	USACL	
H. Yokum & Sons domestic	20S/21E-12A1	8-16-62	74	1,120				127 5.52	1.0 0.02				192 5.41			0.30			52	255	DNR		
Salzer Land Company irrigation	20S/21E-16D	8-14-62	76	193				1.1 0.03				45 1.55			0.12			90	22	DNR			
J. Halsey domestic and irrigation	20S/22E-1A1	8-16-62	70	217				36 1.57	0.2 0.00			5.6 0.15			0.12			69	35	DNR			
J. G. Stone Land Co. domestic and irrigation	21S/18E-1D1	8-15-62	75	1,440	8.1	89 4.10	37 3.09	190 8.25	1.8 0.05	0	93 1.52	591 12.31	64 1.81	2.5 0.13	0.2 0.01	0.70	22		1,130	52	375	USACL	
E. H. Aldrin irrigation	21S/18E-17W1	8-23-62	76	1,180	8.0	84 4.18	38 3.12	123 5.35	2.6 0.07	0	109 1.79	480 10.00	25 0.70	7.0 0.12	0.2 0.01	0.50	26		840	42	365	USACL	
J. Verboon irrigation	21S/21E-1A2	8-23-62	68	1,810				362 15.75	2.8 0.07				211 0.60			1.02			81	182	DNR		

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b. Gravimetric determination unless otherwise noted.
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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

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1962

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						equivalents per million												Silica (SiO ₂)			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)				Baron (B)		Other constituents ^d
KILBO COUNTY (continued)																					
J. Boyett stock and irrigation	21S/22E-13G1	8-20-62	67	316				46 2.03	0.6 0.02					16 0.15		0.11	ABS 0.00	64	56	DMR	
P. Rietkerk domestic	21S/22E-22M2	8-20-62	72	980	9.8	14 0.68	4.3 0.35	207 9.00	0.8 0.02	12 0.10	325 5.32	0.0	147 1.15	3.1 0.05	0.1 0.01	0.10	28	ABS 0.00	89	52	USACL
Avenal High School domestic	22S/17E-15V2	8-23-62	81	1,320	7.8	40 1.98	1.7 0.11	265 11.50	1.1 0.03	0	68 1.11	535 11.15	43 1.20	0.0	0.02 0.01	0.90	26		89	106	USACL
W. F. Preuty irrigation	22S/19E-20N1	8-20-62	79	1,265	8.4	19 0.97	5.6 0.16	270 11.75	1.1 0.03	11 0.38	260 4.27	96 2.01	222 0.25	3.3 0.05	0.1 0.01	0.10	25		89	72	USACL
P. Hansen domestic	22S/22E-10A1	8-20-62	78	428				71 3.09	3.5 0.09				23 0.05			0.27			72	56	DMR
Tidewater Assoc. Oil Co. 23S/18E-29E1 industrial		8-23-62	84	2,920	8.1	75 3.76	98 4.12	505 22.05	4.5 0.12	0	157 2.58	1,326 27.01	106 2.97	1.8 0.28	0.4 0.02	2.70	36		65	594	USACL
South Lake Farms irrigation	23S/21E-18D1	8-20-62	71	11,000	8.1	70 3.50	203 16.70	2,350 102.61	23 0.59	0	1,750 34.01	7.2 0.15	3369 95.00	0.0	0.1 0.01	7.40	53		83	1,010	USACL
P. Rowe irrigation	24S/13E-19O1	8-29-62	71	1,120	8.3	49 2.13	73 5.96	173 7.50	3.8 0.10	5.4 0.14	263 4.31	443 9.23	69 1.95	6.4 0.09	0.2 0.01	1.60	29		44	420	USACL
South Lake Farms irrigation	24S/19E-30H1	9-23-62	76	2,100	8.0	126 6.29	140 11.16	238 10.35	6.8 0.17	0	207 3.10	831 17.30	258 7.29	28 0.15	0.1 0.01	1.80	37		37	888	USACL
W. E. Nicolai irrigation and stock	24S/22E-35U1	8-24-62	70	442	8.2	12 0.60	1.0 0.04	91 3.95	0.3 0.01	0	178 2.92	67 1.11	13 0.35	0.0	0.2 0.01	0.30	20		85	34	USACL

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ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm	
						KERN COUNTY																		
Tejon Ranch domestic	11N/18W-14W1	6-19-62	74	1,32				49 2.13	5.4 0.14					12 0.34			0.28			37	174		DWR	
Tejon Ranch domestic and irrigation	11N/19W-25F1	6-19-62	68	1,79	8.1	37 1.85	18 1.45	36 1.57	2.5 0.06	0 0.00	197 3.23	49 1.02	20 0.56	4.8 0.08	0.5 0.03		0.35	34	Zn 0.05 Fe 0.01	301	32	165	3	DWR
W. Fry irrigation	11N/20W-8R1	6-26-62	80	1,580				125 5.44	7.5 0.19				54 1.52			0.52				32	558		DWR	
Kern Rock Company industrial	11N/20W-25K1	6-19-62	80	2,390				206 8.96	11 0.28				68 1.92			0.46		14 0.00		33	902		DWR	
Mazda irrigation	11N/22W-8B1	9-5-62	83	3,070	8.1	340 16.97	115 9.43	274 11.92	11 0.28	0 0.00	136 2.23	1,500 31.23	143 4.03	31 0.50	1.0 0.05	1.10				2,760	31	1,320	1,210	USGS
R. Hildebrand irrigation	12N/19W-33R1	6-19-62	72	359				32 1.39	3.6 0.09				7.7 0.22			0.18				38	108		DWR	
Parks Brothers irrigation	12N/21W-33W1	6-26-62	80	1,540	8.1	168 8.38	48 3.93	109 4.74	8.4 0.21	0 0.00	122 2.00	700 14.57	28 0.79	14 0.22	1.1 0.06	0.39		Zn 0.02 Fe 0.06	1,260	27	616	516	DWR	
Galland Oil Company industrial	25S/18E-3N2	7-26-62	72	4,120	8.0	260 12.97	257 21.13	256 15.49	7.0 0.18	0 0.00	178 2.92	1,180 24.57	722 20.37	8.3 0.13	0.3 0.02	2.10			3,270	31	1,700	1,550	USGS	
K.K. Ranch # 25 irrigation	25S/19E-602	7-26-62	78	1,100	8.2	136 6.79	201 16.51	250 23.92	20 0.51	0 0.00	199 3.25	1,100 29.98	482 13.60	7.0 0.11	0.2 0.01	2.90			3,320	50	1,160	998	USGS	
K.K. Ranch # 29 irrigation	25S/19E-7P1	7-26-62	76	5,120	8.1	128 6.39	262 21.51	760 33.06	14 0.36	0 0.00	348 5.70	2,150 44.76	400 11.28	15 0.24	0.2 0.01	7.20		Fe 0.28; As 0.01 Al 0.31; Zn 0.01	4,170	54	1,100	1,120	USGS	
J. Errotebarre Stock	25S/19E-23B1	9-6-62		3,430	8.3	134 6.69	142 11.67	465 20.23	7.0 0.18	10 0.33	204 3.34	1,230 25.61	320 9.03	13 0.29	0.3 0.02	3.30			2,740	52	918	734	USGS	
G. Fiorini Domestic	25S/24E-27R1	6-27-62	86	770	8.0	85 4.24	10 0.86	62 2.70	0.9 0.02	0 0.00	114 1.87	182 3.79	45 1.27	40 0.65	0.0 0.00	1.50			576	35	255	162	USGS	

a. Determined by addition of constituents.

b. Gravimetric determination unless otherwise noted.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per-cent sodium	Hardness as CaCO ₃		Analyzed by c	
						equivalents per million												Total ppm	N.C. ppm		
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ride (NO ₃)	Fluo-ride (F)						Boron (B)
G. Fiorini irrigation	25S/25B-4Q1	7-11-62	74	323					KERN COUNTY												
Mid-State Horticultu-ral Co. irrigation	25S/26B-1R1	6-19-62	76	329																	
M. Caratan irrigation	25S/26B-16J1	6-19-62	78	360	8.2																
M. Caratan irrigation	26S/18B-1A	7-11-62	80	1,970																	
F. Still irrigation	26S/18B-23W2	6-25-62	78	2,510	8.4																
Gilbreath Brothers irrigation	26S/22B-10G1	9-5-62	72	216	9.4																
R. E. Williams irrigation	26S/22B-27Q1	9-5-62	74	2,760	8.0																
20th Cen. F&G Club irrigation	26S/23B-3E1	9-5-62	72	509	8.0																
R. Heitzig irrigation	26S/24B-3R1	7-11-62	76	183																	
N.G. Smith domestic and stock	26S/27B-9G1	6-27-62	84	1,710	8.1																
E. Still stock	27S/19B-28H1	9-6-62	72	7,830	8.2																
Tide-water Oil Co. industrial	27S/20B-34G1	6-25-62	82	2,280	8.7																
T. Kenney irrigation	27S/22B-2Q2	8-17-62	77	2,110																	

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.0 except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million equivalents per million										Total dissolved solids in ppm (5)	Percent total solid in ppm	Hardness as CaCO ₃		Analyzed by c				
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)			Boron (B)	Silica (SiO ₂)		Other constituents			
B.M. Crawford Irrigation	27S/22E-21P1	10-9-62	68	2,960	7.9	229 11.43	26 2.14	297 17.27	2.7 0.07	0	159 2.61	592 12.32	561 15.82		2.1 0.05	0.2 0.01	1.10	26		2,000	56	679	549	DWR
	27S/22E-28G2	8-6-62	68	1,630				250 10.88	1.0 0.02			413 8.60	188 5.30				0.72				68	250		DWR
	27S/23E-27J1	7-11-62	80	517				92 4.00	0.4 0.01				53 1.49				0.12				85	35		DWR
Kern Co. Land Co. Irrigation	27S/24E-5R1	7-11-62	75	1148	7.8	442 0.24	0.0 0.00	27 1.17	6.5 0.01	0	59 0.97	12 0.25	6.3 0.18		2.9 0.05	0.1 0.01	0.08	21	Fe 0.06; Al 0.03 Zn 0.02	105	82	12	0	DWR
	27S/24E-34F1	9-6-62	76	174	7.8	244 0.47	0.1 0.01	28 1.22	0.9 0.02	0	68 1.11	14 0.29	11 0.31		2.1 0.03	0.0 0.00	0.00	22		111	71	214	0	USGS
	27S/25E-5R1	6-25-62	72	324				27 1.17	1.9 0.05				2.8 0.28				0.07		ABS 0.00		38	94		DWR
Kern Co. Land Co domestic and irrigation	27S/25E-34A2	9-7-62	71	366	8.3	47 2.35	3.5 0.29	26 1.13	2.4 0.06	1 0.03	133 2.18	31 0.65	15 0.42		30 0.48	0.0 0.00	0.00	35		244	30	132	21	USGS
	27S/26E-27R1	6-13-62	70	1,510	8.1	184 9.18	45 3.74	46 2.00	5.2 0.13	0	154 2.52	82 1.71	252 9.93		20 0.48	0.0 0.00	0.10	32		1,110	13	646	520	USGS
	27S/27E-29J1	6-19-62	71	1,640				150 6.52	2.6 0.09				366 10.32				0.34				43	432		DWR
Houchin Ranch domestic and irrigation	28S/22E-4A1	9-10-62		2,100	7.6	114 5.69	2.7 0.80	425 18.49	1.4 0.04	0	52 0.95	507 10.56	466 13.14		1.5 0.02	0.4 0.02	0.86	17		1,530	74	325	282	DWR
	28S/22E-10R1	8-6-62	68	1,200	8.3	78 3.89	6.0 0.49	166 7.22	1.3 0.03	6 0.20	232 3.80	248 5.16	98 2.76		0.8 0.01	0.2 0.01	0.60	23	Fe 0.43; Zn 0.02 Al 0.04 As 0.05 Mn 0.36	785	62	219	19	USGS
	8-22-62	67																						DWR
Houchin Ranch domestic and irrigation	28S/22E-26J1	8-6-62	67	937	7.7	72 3.59	7.7 0.63	124 5.39	1.6 0.04	0	232 3.80	210 4.37	54 1.52		0.7 0.01	0.5 0.03	0.20	26		625	56	211	21	USGS

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QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						equivalents per million												Total	N.C.		ppm
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ate (NO ₃)	Fluo-ride (F)						
KERN COUNTY (continued)																					
B. Issac domestic and irrigation	29S/255-17L1	6-19-62	89	181				31 1.35	0.8 0.02	0			6.6 0.19			0.10		74 23	DWR		
S. A. Camp #12 irrigation	20S/265-11A1	6-13-62	77	102	7.8	17 0.35	0.6 0.05	59 2.52	1.1 0.03	0	48 0.79	38 0.79	63 1.78	3.1 0.05	0.2 0.01	0.04	18	Fe 0.07; Al 0.15 Zn 0.02	231 73 45 6	DWR	
Kern Co. Land Company irrigation	20S/265-30A1	6-19-62	74	854				57 2.43	2.5 0.06	0			90 2.54			0.03		30 284	DWR		
Kern Co. Ind. Farm don. and irrig.	20S/275-7C	9-7-62	33	284	8.3	2.8 0.11	0.0 0.00	58 2.52	0.8 0.02	3	86 1.41	5.0 0.10	10 1.13	0.0 0.00	0.2 0.01	0.10	24		163 94 7 0	USGS	
Houchin Ranch #7 irrigation	29S/235-24H1	8-6-62	66	384				57 2.48	0.04 0.01	0	77 1.26	34 0.71	50 1.41	4.7 0.08	0.2 0.01	0.16		71 50	DWR		
P. Curtis irrigation	29S/255-10H1	6-19-62	74	384	7.9	10 0.40	1.2 0.10	31 1.35	1.2 0.03	0			22 0.62			0.16				DWR	
Kern County Land Co. irrigation	29S/255-32F1	9-6-62	72	234	8.2	18 0.90	1.0 0.08	30 1.30	1.0 0.03	0	98 1.61	15 0.31	13 0.37	2.6 0.04	0.1 0.01	0.10	24	Fe 0.07; Al 0.05 Zn 0.02	156 49 0	USGS	
Kern County Land Co. irrigation	29S/265-9R1	9-6-62	72	879	8.0	111 5.54	4.6 0.38	65 2.83	3.0 0.08	0	110 1.80	205 4.27	83 2.34	15 0.24	0.0 0.00	0.20	20		585 32 296 206	USGS	
P. Grimes irrigation	29S/265-35X1	7-11-62	63	221				17 0.71	1.0 0.02	0			8.1 0.23			0.14		32 76	DWR		
D. F. McCan irrigation	29S/295-12E1	6-13-62	78	425	8.2	21 1.05	1.1 0.09	70 3.04	2.7 0.07	0	162 2.66	49 1.02	16 0.45	2.0 0.03	0.1 0.01	0.14	25	Fe 0.03; Al 0.00 Al 0.01; Zn 0.05	279 72 57 0	DWR	
California Water Service municipal	29S/285-31F1	8-2-62	69	720	8.2	84 4.19	1.5 1.22	11 1.78	3.7 0.09	0	202 3.31	71 1.18	86 2.42	8.2 0.13	0.2 0.01	0.25	30	ABS 0.00	446 24 271 105	DWR	
Kern Oil Company domestic and irrigation	29S/295-34H1	6-13-62	78	581	8.2	19 0.95	3.3 0.27	112 4.87	2.7 0.07	0	296 4.85	0.0	47 1.32	0.4 0.01	0.1 0.00	0.24	31	Fe 0.62; Mn 0.13 Al 0.07; As 0.13 Zn 0.05	362 ^a 79 61 0	DWR	
L. & P. Dadini domestic	30S/235-1C1	8-6-62	70	581	7.5	10 0.50	0.1 0.01	101 4.39	1.0 0.03	0	38 0.62	18 0.37	145 4.09	0.0 0.00	0.6 0.03	0.30	18		314 89 26 0	USGS	
		8-2-62	73															Fe 0.09; As 0.04 Al 0.02; Zn 0.01		DWR	
State of California stock and irrigation	30S/245-14H1	6-26-62	72	756	8.1	79 3.94	4.1 0.34	73 3.78	1.2 0.03	0	110 1.70	244 5.02	21 0.59	0.1 0.00	0.1 0.00	0.24	23	Li 0.00	540 42 214 124	DWR	

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium (b)	Hardness as CaCO ₃		Analyzed by c	
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)	Barium (Ba)			Silica (SiO ₂)	Other constituents		
																			Total ppm		N.C. ppm
KERN COUNTY (continued)																					
C. Samuels domestic and irrigation	30S/28E-11L2	6-26-62	79	542		148 2.09	4.6 0.12					32 0.56			0.20		164	DNR			
Douglas Oil Company industrial	30S/28E-25A1	6-13-62	83	503		144 1.91	4.4 0.11					20 0.56			0.21		163	DNR			
F. Sandrini irrigation	30S/28E-29B1	9-5-62	71	333	7.9	34 1.35	3.0 0.08	136 2.23	25 0.52	18 0.51	1.7 0.03	0.2 0.01			0.10	25	93	USGS			
T. Panella domestic	30S/29E-5D2	6-13-62	78	1,360	8.0	112 5.19	6.7 0.17	168 2.75	178 3.70	156 4.10	136 2.19	0.1 0.00			0.14	28	404	DNR			
H. Porter irrigation	30S/29E-20A1	6-22-62	69	781		50 2.18	5.5 0.11			68 1.92					0.18		273	DNR			
F. Alexis domestic and irrigation	30S/29E-27J1	6-22-62	67	775	8.2	62 2.70	6.3 0.16	130 2.13	83 1.83	58 1.64	110 1.77	0.4 0.03			0.10	37	226	DNR			
R. Randuchi irrigation	31S/24E-28B1	7-18-62	79	5,920	8.0	759 33.02	12 0.31	95 1.56	2,160 44.97	823 23.21	21 0.34	0.2 0.01			1.50	66	1,770	DNR			
Houchin Farms irrigation	31S/25E-25H1	9-5-62	73	460	8.2	80 1.05	1.3 0.03	117 1.92	100 2.03	2.8 0.28	0.4 0.01	3.7 0.19			0.56	16	53	DNR			
Kern County Land Co. irrigation	31S/26E-32C1	9-5-62	73	460	8.2	23 1.15	1.8 0.05	126 2.07	101 2.10	10 0.28	0.7 0.01	3.0 0.16			0.50	10	50	USGS			
Kern County Land Co. irrigation	31S/27E-11F1	9-5-62	68	377	8.2	44 2.26	1.7 0.11	165 2.70	37 0.77	16 0.15	2.3 0.04	0.3 0.02			0.10	32	117	USGS			
Palm Dairy-J. DeVries domestic	31S/28E-7B3	6-11-62	67	526		50 2.18	2.0 0.05			28 0.79					0.10		154	DNR			
E. Yakatch irrigation	31S/29E-17E1	6-22-62	70	564		64 2.78	3.6 0.09			28 0.79						130	130	DNR			
G. Preston irrigation	32S/25E-34G1	8-28-62	88	3,810	8.0	521 26.00	98 8.10	365 15.88	11 0.28	140 2.29	2,230 46.43	50 1.11	0.6 0.01	0.2 0.01	3.10	57	1,705	USGS			
G. Preston irrigation	32S/25E-34G1	9-5-62	87	3,820	8.0	545 27.20	88 7.20	395 17.15	10 0.26	130 2.21	2,200 45.83	49 1.38	1.4 0.02	0.1 0.01	1.60	48	1,720	USGS			

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b. Gravimetric determination unless otherwise noted.

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.00 except as shown.

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						equivalents per million												Total ppm	N.C.		
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ride (NO ₃)	Fluor-ide (F)						Boron (B)
KERN COUNTY (continued)																					
L. A. Athletic Club irrigation	32S/27E-6D1	8-13-62	75	390				69 3.00	0.9 0.02				11 0.31			0.35		84	28	DMR	
	Kern County Land Co. domestic	32S/27E-16R1	6-14-62	70	898			82 3.57	2.9 0.07				22 0.62			0.36		38	288	DMR	
H. Harford domestic and irrigation	32S/28E-12F1	6-14-62	69	359	8.2	24 1.20	4.1 0.30	17 2.04	2.4 0.06	0 0.00	113 2.31	44 0.92	13 0.37	1.2 0.02	0.9 0.05	0.22	20	56	77	0	DMR
C. Dickey irrigation	32S/29E-11R1	7-11-62	79	1,490				188 8.18	3.6 0.09				304 8.57			1.50		59	279		DMR
Tejon Ranch irrigation	32S/29E-35M2	9-5-62	73	1,090	7.5	84 4.19	26 2.13	94 4.09	5.4 0.11	0 0.00	172 2.82	112 2.33	94 2.65	159 2.56	0.2 0.01	0.20	22	39	316	175	USGS

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d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 0.0 except as shown.

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm (b)	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						equivalents per million												Total ppm	N.C. ppm			
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)	Silica (SiO ₂)
PANACHE VALLEY (5-23) SAN BENITO COUNTY																						
F. Mendez stock and irrigation	15S/10E-15G1	7-12-62	72	890	8.1	73 3.64	31 2.59	81 3.52	24 0.06	0	226 3.70	211 4.39	35 0.99	24 0.39	0.4 0.02	1.00	43	606	36	312	127	DWR
Rey Brothers irrigation	15S/10E-16A1	7-12-62	72	628	8.2	33 1.65	24 2.01	79 3.44	21 0.05	0	206 3.38	102 2.12	28 0.79	11 0.18	0.6 0.03	5.20	47	406	48	183	14	DWR
Rey Brothers irrigation	15S/10E-20D	7-12-62	76	1,820	7.8	74 3.69	47 3.88	110 4.78	35 0.09	0	254 4.16	308 6.41	27 1.61	52 0.10	0.4 0.02	1.60	44	956	38	379	171	DWR
S. Serlisen domestic	15S/10E-21L1	7-12-62	73	1,380	8.2	99 4.94	57 4.69	121 5.26	36 0.09	0	252 4.13	419 8.72	59 1.66	20 0.32	0.6 0.03	1.00	44	1,090	35	482	275	DWR
Rey Brothers irrigation	15S/10E-22D1	7-12-62	73	1,210	8.0	96 4.79	46 3.82	120 5.22	22 0.08	0	194 3.18	430 8.95	52 1.47	93 0.15	0.6 0.03	5.40	41	927	38	431	272	DWR
H. Berg irrigation	15S/11E-30C	7-12-62	75	2,560	8.2	157 7.83	105 8.61	234 14.53	54 0.14	0	224 3.67	1,050 21.86	200 5.64	56 0.09	0.2 0.01	6.10	44	2,050	47	823	639	DWR

a. Determined by addition of constituents.

b. Gravimetric determination unless otherwise noted.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agricultural Consultants Laboratory (U.S.A.C.L.), State Department of Water Resources (DWR) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{mg}}{\text{L}}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-t-rite (NO ₃)	Fluo-ride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm
						LAHONTAN REGION (No. 6) SURPRISE VALLEY (6-1)																
L. Cockrell domestic	40N/16E-11C1	7-10-62	56	208	8.1	24 1.20	5.6 0.16	12 0.52	1.8 0.05	0	129 2.11	1.3 0.03	1.2 0.03	1.4 0.02	0.0	0.04	26	Al 0.05 Cu 0.01 Mn 0.01 Zn 0.03	138	83	0	DMR
D. I. Grove domestic	-36F1	7-10-62	58	301	8.1	28 1.40	10 0.84	21 0.91	2.4 0.06	0	176 2.88	1.0 0.21	2.4 0.07	1.0 0.02	0.2	0.06	45	Fe (total) 0.01 Al 0.03 Mn 0.01 Zn 0.03	204	112	0	DMR
B. Cambran stock and fish pond	40N/17E-20C1	7-10-62	56	374	7.8	26 1.30	5.6 0.16	40 1.74	5.5 0.14	0	131 2.15	2.6 0.75	2.4 0.68	1.1 0.02	0.3	0.18	56	Fe (total) 0.02 Al 0.03 Mn 0.05	268	88	0	DMR
L. Heryford stock	41N/16E-4G1	7-10-62	59	216	8.0	25 1.25	2.6 0.21	18 0.78	0.8 0.02	0	127 2.03	4.8 0.10	1.6 0.04	0.8 0.01	0.1	0.06	28	Al 0.05 As 0.01	139	73	0	DMR
H. Melitz domestic	-25C3	7-10-62	58	181	7.8	6.2 0.31	0.4 0.03	33 1.44	2.1 0.05	0	81 1.33	1.5 0.31	5.2 0.15	0.5 0.01	0.3	0.12	42	Al 0.01 As 0.01	154	17	0	DMR
M. Urrels irrigation	42N/16E-4F1	7-10-62	56	402	7.8	4.3 2.14	1.3 1.06	23 1.00	1.1 0.03	0	208 3.41	1.3 0.27	8.5 0.24	1.4 0.22	0.1	0.06	24	Fe (total) 0.03 Al 0.10	254	160	0	DMR
Surprise Valley Lumber Co. domestic and cooling	-6R2	7-10-62	53	410	8.0	51 2.54	14 1.18	15 0.65	1.2 0.03	0	249 4.03	9.2 0.19	2.8 0.08	2.5 0.04	0.0	0.05	35	Al 0.05 As 0.02 Mn 0.01	274	186	0	DMR
J. B. Lavague domestic and stock	-21L1	7-10-62	57	227	8.0	24 1.20	3.4 0.28	22 0.96	0.8 0.02	0	139 2.28	4.1 0.68	1.4 0.04	1.0 0.02	0.0	0.06	26	Al 0.04	156	74	0	DMR
E. Cook domestic	-34F1	7-10-62	61	300	8.2	14 0.70	3.4 0.28	48 2.09	3.1 0.08	0	187 3.06	0.2 0.00	1.5 0.04	0.5 0.01	0.1	0.1	28	Fe (total) 0.03 Al 0.04 As 0.01 Cu 0.01 Mn 0.01	208	49	0	DMR
G. W. Warren domestic	43N/16E-20B1	7-11-62	68	274	8.3	6.0 0.30	0.0 0.00	60 2.61	0.9 0.02	0	161 2.64	4.1 0.08	2.1 0.06	6.2 0.11	0.3	0.12	24	Al 0.01 As 0.01	184	15	0	DMR
F. Arreche domestic and stock	-33M3	7-11-62	63	397	8.2	44 2.20	8.8 0.72	28 1.22	1.0 0.02	0	223 3.65	6.7 0.14	4.7 0.13	15 0.24	0.0	0.11	30	As 0.01 Cu 0.01	244	146	0	DMR
M. Quirk irrigation	44N/16E-6E2	3-20-62	76	652	8.3	3.3 0.16	0.5 0.04	147 6.39	2.9 0.07	1	278 4.56	0.0 0.00	70 1.97	0.4 0.01	0.8	5.5	67		435	10	0	DMR
		7-11-62	77	666	8.4	6.0 0.30	0.2 0.02	145 6.31	3.0 0.08	4	271 4.44	0.0 0.00	72 2.03	0.2 0.00	0.8	5.8	69	Fe (total) 0.02 As 0.02 Mn 0.03	444	16	0	DMR

a. Determined by addition of constituents.
 b. Gravimetric determination.
 c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), U.S. Agriculture Consultants (U.S.A.C.) or State Department of Water Resources (D.W.R.) as indicated.
 d. Iron (Fe), Aluminum (Al), Arsenic (As), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\mu\text{g/l}$ except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA ANALYSES OF GROUND WATER 1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-trate (NO ₃)	Fluo-ride (F)			Baron (B)	Silica (SiO ₂)		Other constituents	Total ppm	N.C. ppm
	<u>ND&M</u>							<u>SURPRISE VALLEY (6-1) (cont'd.)</u>															
L. Hanks domestic	45N/16E-17D1	7-11-62	62	343	8.3	45 2.24	2.5 0.78	11 0.48	2.7 0.07	0 0.00	192 3.15	4.9 0.10	4.7 0.13	15 0.24	0.2 0.01	0.05	42	Al 0.02 As 0.01 Zn 0.05	221	13	151	0	DWR
L. Hill domestic and irrigation	-19Q1	7-11-62	65	312	8.3	27 1.35	8.9 0.75	26 1.13	3.1 0.08	0 0.00	184 3.02	64 0.13	3.8 0.11	0.5 0.01	0.0 0.00	0.07	44	As 0.01 Mn 0.08	212	34	104	0	DWR
C. A. Youngman domestic	46N/16E-4K1	7-11-62	61	213	8.0	16 0.80	6.8 0.56	16 0.70	5.8 0.15	0 0.00	122 2.00	4.0 0.08	2.8 0.08	2.2 0.04	0.2 0.01	0.06	50	Al 0.02 Mn 0.02 Zn 0.41	165	32	68	0	DWR
R. W. Peterson	-13C1	7-11-62	59	478	8.2	39 1.95	13 1.11	44 1.91	5.8 0.15	0 0.00	255 4.18	23 0.48	13 0.37	1.0 0.02	0.6 0.03	0.36	22	Fe (total) 0.09 Al 0.04 As 0.01 Mn 0.13 Zn 0.18	321	37	153	0	DWR
Fee Ranch Inc. irrigation and stock	46N/16E-14R1	7-11-62	54	276	8.3	26 1.30	7.8 0.64	17 0.74	4.3 0.11	0 0.00	120 1.97	21 0.44	13 0.37	0.8 0.01	0.2 0.01	0.10	23	Al 0.04 As 0.01	217	26	97	0	DWR
								<u>MADEIRA PLAINS (6-2)</u>															
G. Drumond domestic	34N/14E-15H1	7-12-62	54	303	8.1	26 1.30	12 0.96	18 0.78	4.5 0.12	0 0.00	167 2.74	12 0.25	4.3 0.12	0.3 0.00	0.1 0.00	0.01	26	Al 0.04 As 0.01 Mn 0.13 Zn 0.18	186	25	113	0	DWR
Southern Pacific Railroad domestic and industrial	-22A1	7-12-62	64	253	8.1	24 1.20	11 0.90	13 0.50	2.8 0.07	0 0.00	150 2.46	2.5 0.05	3.5 0.10	4.7 0.08	0.1 0.00	0.05	33	Al 0.04 As 0.01 Mn 0.13 Zn 0.18	170	20	105	0	DWR
T. Garate stock	34N/15E-21L1	7-12-62	57	130	7.8	5.4 0.27	1.1 0.09	21 0.91	4.0 0.10	0 0.00	72 1.18	2.3 0.05	2.1 0.06	0.3 0.00	0.1 0.00	0.04	23	Al 0.04 As 0.01 Mn 0.13 Zn 0.18	96	66	18	0	DWR
D. E. Hatch stock	-31H1	7-12-62	54	213	7.9	22 1.10	7.5 0.62	10 0.41	1.7 0.04	0 0.00	195 1.72	4.8 0.10	4.8 0.11	1.3 0.21	0.1 0.00	0.06	41	Al 0.10 As 0.01 Cu 0.01 Zn 0.28	165	20	86	0	DWR
Rock Hill Ranch stock	35N/12E-20B1	7-12-62	61	274	8.4	20 1.00	14 1.16	16 0.70	3.5 0.09	2 0.07	152 2.49	2.8 0.06	3.2 0.09	1.3 0.21	0.2 0.01	0.05	45	Fe (total) 0.01 Al 0.10 As 0.01 Cu 0.01 Zn 0.28	200	24	108	0	DWR
State of California domestic	35N/13E-26J1	7-12-62	53	684	7.8	32 1.60	35 2.88	62 2.70	8.8 0.22	0 0.00	362 6.05	15 0.31	17 0.48	36 0.36	0.3 0.02	0.12	44	Al 0.04 As 0.01 Mn 0.13 Zn 0.18	427	36	224	0	DWR
H. Marr stock	35N/14E-24G2	7-12-62		268	8.2	20 1.00	2.7 0.22	37 1.61	3.8 0.10	0 0.00	159 2.81	4.9 0.10	6.2 0.17	0.1 0.00	0.2 0.01	0.02	24	Al 0.04 As 0.01 Mn 0.13 Zn 0.18	177	55	61	0	DWR
P. C. Fredrickson stock	35N/16E-18D1	7-12-62	51	1,250	8.8	52 2.59	8.9 0.73	238 10.35	30 0.77	60 2.00	653 10.70	11 0.23	46 1.30	9.7 0.16	0.6 0.05	0.12	42	Fe (total) 0.13 Al 0.05 Cu 0.01 Pb 0.02 Mn 0.21 Zn 1.1	859	72	166	0	DWR
W. Michaud stock	-19F1	7-12-62	52	325	8.5	10 0.50	3.9 0.32	58 2.52	4.6 0.12	4 0.13	185 3.03	2.0 0.04	7.2 0.20	0.1 0.00	0.3 0.02	0.04	54	Fe (total) 0.13 Al 0.05 Cu 0.01 Pb 0.02 Mn 0.21 Zn 1.1	244	73	41	0	DWR

p. Determined by addition of constituents.

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC).

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.), U.S. Agriculture Consultants (U.S.A.C.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{mg}}{\text{kg}}$ except as shown

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Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-ide (NO ₃)	Fluo-ride (F)			Boron (B)	Silico (SiO ₂)		Other constituents	Total ppm
R. Brasher domestic	22N/17E-4K1	8-9-62		409	8.2	32 1.60	10 0.34	39 1.70	2.7 0.07	0	198 3.24	8.6 0.18	12 0.34	26 0.42	0.2 0.01	0.0	51	Al 0.01 As 0.01 Cu 0.05 Zn 0.03	294	40	0	DMR
						26 1.80	10 0.36	58 2.52	3.4 0.09	2	198 3.24	70 1.46	16 0.45	4.2 0.07	0.7 0.04	0.27	32	Fe (total) 0.01 Al 0.02 As 0.01 Pb 0.01	303	48	0	DMR
R. L. Slaughter domestic	27N/14E-26E1	8-6-62		192	7.4	20 1.00	1.0 0.03	16 0.70	2.5 0.06	0	72 1.18	13 0.27	6.0 0.17	15 0.24	0.1 0.00	0.06	44	Fe (total) 0.01 Cu 0.03 Pb 0.02 Zn 0.10	164	38	0	DMR
						109 5.44	1.9 1.55	224 9.74	17 0.43	0	151 2.47	106 2.21	435 12.27	5.3 0.08	0.2 0.01	0.40	51	Fe (total) 0.04 As 0.01 Cu 0.03 Mn 0.35 Zn 0.03	1,260	57	226	DMR
U.S. Army domestic	-36Q2	8-7-62	63	1,100	8.2	89 4.44	33 2.73	98 4.26	5.0 0.13	0	202 3.31	246 7.20	38 1.07	7.3 0.12	0.6 0.03	0.24	41	Fe (total) 0.02 Cu 0.01 Pb 0.01 Mn 0.54 Zn 0.01	823	37	193	DMR
						24 1.20	3.6 0.30	11 0.48	1.5 0.04	0	88 1.44	2.6 0.05	3.1 0.09	27 0.44	0.0 0.00	0.09	44	Fe (total) 0.33 Cu 0.01 Pb 0.02 Zn 0.01	177	24	3	DMR
City of Janesville irrigation	28N/13E-9E1	8-6-62	56	205	7.7	47 2.34	22 1.82	231 10.05	8.0 0.20	10	278 4.56	56 1.15	290 8.18	2.3 0.04	0.3 0.02	0.39	56	Al 0.02 As 0.01 Zn 0.02	866	70	0	DMR
						27 1.35	9.5 0.79	58 2.52	5.4 0.14	6	255 4.18	7.7 0.16	4.6 0.13	2.7 0.04	0.5 0.03	0.14	67	As 0.16 Pb 0.01	300	52	0	DMR
State of California irrigation	28N/14E-2G1	8-8-62	56	1,440	8.6	47 2.34	22 1.82	231 10.05	8.0 0.20	10	278 4.56	56 1.15	290 8.18	2.3 0.04	0.3 0.02	0.39	56	Al 0.02 As 0.01 Zn 0.02	866	70	0	DMR
						27 1.35	9.5 0.79	58 2.52	5.4 0.14	6	255 4.18	7.7 0.16	4.6 0.13	2.7 0.04	0.5 0.03	0.14	67	As 0.16 Pb 0.01	300	52	0	DMR
Triami Cattle Corp. domestic	-17B1	8-9-62	433	433	8.5	15 0.80	1.0 0.03	235 10.22	5.2 0.13	4	38 0.62	276 5.15	167 4.71	0.2 0.00	4.8 0.25	4.1	23	Fe (total) 0.02 Al 0.10 Pb 0.01 Zn 0.01	867	91	6	DMR
						10 0.50	0.5 0.04	42 1.83	4.5 0.12	0	101 1.66	19 0.40	12 0.34	2.8 0.04	0.1 0.00	0.08	32	Fe (total) 0.02 Al 0.10 Pb 0.01 Zn 0.01	190	73	0	DMR
J. Humphrey Hot springs	28N/16E-8B	8-7-62	217	1,270	8.5	15 0.80	1.0 0.03	235 10.22	5.2 0.13	4	38 0.62	276 5.15	167 4.71	0.2 0.00	4.8 0.25	4.1	23	Fe (total) 0.02 Al 0.10 Pb 0.01 Zn 0.01	867	91	6	DMR
						10 0.50	0.5 0.04	42 1.83	4.5 0.12	0	101 1.66	19 0.40	12 0.34	2.8 0.04	0.1 0.00	0.08	32	Fe (total) 0.02 Al 0.10 Pb 0.01 Zn 0.01	190	73	0	DMR
Hooper and Tinsley public fountain	28N/17E-18K1	8-7-62	61	252	8.0	10 0.50	0.5 0.04	42 1.83	4.5 0.12	0	101 1.66	19 0.40	12 0.34	2.8 0.04	0.1 0.00	0.08	32	Fe (total) 0.02 Al 0.10 Pb 0.01 Zn 0.01	190	73	0	DMR
						8.7 0.43	1.8 0.15	43 1.87	4.5 0.12	0	118 1.93	15 0.31	10 0.28	0.7 0.01	0.2 0.01	0.10	42	Fe (total) 0.01 Pb 0.01	201	73	0	DMR
E. Filippelli irrigation	-20W1	8-7-62	78	254	8.1	13 0.65	2.1 0.17	133 5.78	2.3 0.06	0	87 1.42	174 3.62	56 1.58	0.4 0.01	1.9 0.10	1.4	32	Fe (total) 0.01 As 0.02	466	87	0	DMR
						12 0.50	2.0 0.24	136 5.92	2.5 0.06	0	88 1.44	173 3.60	57 1.61	0.5 0.01	1.6 0.03	1.6	32	Fe (total) 0.01 As 0.02	487	87	0	DMR
Fruit Growers Supply Co. Industrial	29N/12E-4G1	3-22-62	736	736	8.0	13 0.65	2.1 0.17	133 5.78	2.3 0.06	0	87 1.42	174 3.62	56 1.58	0.4 0.01	1.9 0.10	1.4	32	Fe (total) 0.01 As 0.02	466	87	0	DMR
						12 0.50	2.0 0.24	136 5.92	2.5 0.06	0	88 1.44	173 3.60	57 1.61	0.5 0.01	1.6 0.03	1.6	32	Fe (total) 0.01 As 0.02	487	87	0	DMR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (PCC).

d. Terminal Testing Laboratory (T.T.L.), U.S. Agriculture Consultants (U.S.A.C.), or State Department of Water Resources (D.W.R.) as indicated.

e. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as 600 except as shown

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1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c	
						— equivalents per million												Total ppm	N.C. ppm		
						Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Carbonate (CO ₃)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Nitrate (NO ₃)	Fluoride (F)						Boron (B)
MONEY LAKE VALLEY (6-4) (cont'd.)																					
M. A. Mallory domestic	29N/12E-15A1	8-8-62		198	8.1	20 1.00	6.1 0.50	15 0.65	1.3 0.03	0 0.00	126 2.06	1.0 0.02	1.7 0.05	1.1 0.02	0.1 0.00	0.0	52	Zn 0.03	171	30	75 0 DMR
Johnston Ranch domestic	29N/13E-1N1	8-7-62		543	7.9	3.9 0.19	0.4 0.03	112 4.87	3.6 0.09	0 0.00	162 2.66	1.1 0.02	21 0.59	1.9 0.31	0.7 0.04	0.71	60	Al 0.03 As 0.04 Zn 0.02	411	94	11 0 DMR
G. Brabham domestic	-14G1	3-22-62	53	698	8.0	15 0.75	6.7 0.55	121 5.26	3.6 0.09	0 0.00	196 3.21	3.4 0.11	38 1.07	11.0 1.77	0.6 0.03	0.18	66		491	79	65 0 DMR
		8-8-62		589	8.2	11 0.55	4.5 0.37	108 4.70	3.1 0.08	0 0.00	201 3.29	28 0.58	25 0.70	65 1.05	0.6 0.03	0.28	60	Fe (total) 0.02 As 0.03 Cu 0.01 Zn 0.06	445	82	46 0 DMR
E. D. Summers	-34N1	3-22-62	48	309	7.7	28 1.10	10 0.86	15 0.65	1.8 0.05	0 0.00	99 1.62	10 0.21	12 0.34	50 0.81	0.3 0.02	0.02	54		230	22	113 32 DMR
		8-9-62	56	292	8.0	29 1.45	2.6 0.79	16 0.70	2.4 0.06	0 0.00	116 1.90	8.9 0.18	11 0.31	35 0.56	0.2 0.01	0.07	54	Fe (total) 0.01 Mn 0.02 Zn 0.12	237	23	112 17 DMR
C. L. Curtis domestic and garden	29N/14E-4N1	8-7-62		809	8.5	16 0.80	3.9 0.32	160 6.96	1.0 0.26	7 0.23	339 5.56	84 1.75	24 0.68	5.0 0.08	0.5 0.03	0.44	55	Fe (total) 0.01 As 0.02 Zn 0.01	590	83	56 0 DMR
M. Long domestic	-18R1	3-22-62		1,320	8.2	21 1.05	11 0.91	270 11.74	6.1 0.16	0 0.00	442 7.24	269 5.60	27 0.76	17 0.27	1.2 0.06	0.84	61		901	85	98 0 DMR
		8-8-62		1,100	8.2	22 1.10	10 0.82	212 9.22	5.8 0.15	0 0.00	351 5.75	223 4.84	27 0.76	12 0.19	1.0 0.05	0.8	54	Fe (total) 0.01 Al 0.05 As 0.03 Zn 0.01	782	82	96 0 DMR
M. Timmin domestic	-19A2	8-8-62	58	2,010	8.4	43 2.14	19 1.60	271 16.11	16 0.41	6 0.20	428 7.01	249 11.43	46 1.30	72 1.16	1.5 0.08	2.7	57	As 0.13 Zn 0.06	1,500	80	187 0 DMR
State of California irrigation	29N/15E-21N1	8-7-62	62	865	7.9	8.3 0.41	5.2 0.43	186 8.09	5.0 0.13	0 0.00	430 7.05	8.4 0.17	52 1.47	19 0.31	0.6 0.03	0.49	50	Fe (total) 0.01 Al 0.01 Cu 0.03	577	89	42 0 DMR
J. Devitt domestic	-30A2	8-7-62		594	8.5	24 1.20	8.8 0.72	102 4.14	4.4 0.11	9 0.30	342 5.60	6.9 0.14	8.9 0.25	0.8 0.01	0.4 0.02	0.34	38	Fe (total) 0.02 Al 0.08 As 0.01 Cu 0.02 Pb 0.01 Mn 0.01 Zn 0.03	394	69	96 0 DMR
Calif.-Pacific Utility Co. industrial	30N/12E-33N2	8-8-62	71	477	8.1	19 0.95	6.4 0.53	69 3.00	2.9 0.07	0 0.00	100 1.64	20 1.87	33 0.93	0.7 0.01	0.8 0.04	0.84	21	Fe (total) 0.01 As 0.01	324	66	74 0 DMR

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analyzed by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Analytical by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), U.S. Agriculture Consultants (U.S.A.C.) or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as ppm except as shown

1962

a. Determined by addition of constituent.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), Terminal Testing Laboratory (T.T.L.) or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{0.0}{0.0}$ except as shown

QUALITY OF GROUND WATERS IN CALIFORNIA

ANALYSES OF GROUND WATER

1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per-cent sodium ppm	Hardness as CaCO ₃		Analyzed by c			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Bicar-bonate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-troate (NO ₃)	Fluo-ride (F)			Boron (B)	Silica (SiO ₂)		Other constituents ^d	Total ppm	N.C. ppm
Riolo Club Dom. H. Chanda Dom. M. Martin Dom. M. Bennett Hot Springs	MDB&M 16N/17E-13B1 -14B1 -14C1 16N/18E-30B1	9-24-62 9-24-62 9-24-62 9-24-62	117	7.5 8.0 8.2 8.0	17 0.84	1.0 0.12	3.4 0.15	0.5 0.02	0.0 0.00	66 1.08	1.0 0.02	0.0 0.00	2.6 0.05	0.1 0.00	0.0 0.0	0.0 0.0	34		92	13	48	0	USAC
			235		27 1.33	6.0 0.50	10 0.43	4.0 0.10	0.0 0.00	130 2.13	0.0 0.00	0.0 0.00	0.1 0.00	0.0 0.0	35		161	18	92	0	USAC		
			265		29 1.46	9.0 0.70	10 0.43	4.1 0.11	0.0 0.00	155 2.55	1.0 0.01	1.0 0.03	0.1 0.00	0.0 0.0	31		165	16	108	0	USAC		
			650		8.0 0.41	1.0 0.10	113 4.90	3.1 0.03	94 1.53	38 0.78	114 3.20	0.0 0.00	0.6 0.03	0.0 0.0	3.1 0.0	60		384	89	26	0	USAC	
			CARSON VALLEY 6-6																				
A. Riggs Dom. Alpine Co. School Dept. Alpine Co. Road Dept. Alpine Co. School Dept.	MDB&M 11N/19E-24B1 -35D2 -35K1 11N/20E-7W1	9-17-62 9-17-62 9-17-62 9-17-62	138	7.6 7.6 7.5 6.6	13 0.65	3.0 0.25	10 0.14	1.7 0.04	0.0 0.00	72 1.18	1.6 0.03	0.0 0.00	5.8 0.09	0.2 0.01	0.05	30	Fe 0.01 Zn 0.04	100	32	45	0	DMR	
			128		12 0.60	2.4 0.20	10 0.14	2.0 0.05	66 1.08	4.3 0.09	0.0 0.00	0.2 0.00	0.2 0.01	0.04	29	Al 0.04 Zn 0.03	92	34	40	0	DMR		
			84		8.3 0.41	2.3 0.19	1.2 0.03	0.0 0.00	48 0.79	0.3 0.01	1.0 0.03	0.6 0.01	0.1 0.00	0.02	35	Al 0.28 Zn 0.26	79	29	30	0	DMR		
			127		13 0.65	3.5 0.29	2.3 0.06	0.0 0.00	56 0.92	0.0 0.00	3.4 0.10	9.2 0.15	0.1 0.00	0.05	25	Al 0.08 Zn 0.03	91	22	47	1			
			TRUCKEE VALLEY 6-6.7																				
Donner Lake Development Co. - Dom. Truckee P. U. D. Truckee P. U. D. Truckee P. U. D. Truckee P. U. D.	MDB&M 17N/16E-7W1 -8W1 -14F1 -15O1 -16L1 -17E1	9-25-62 9-25-62 9-25-62 9-25-62 9-25-62	130	8.1 8.2 8.2 8.2 8.2	20 1.00	4.0 0.33	7.8 0.34	5.4 0.12	0.0 0.00	107 1.75	1.0 0.01	0.0 0.00	0.0 0.00	0.1 0.00	0.1	34		125	19	67	0	USAC	
			280		19 0.93	4.0 0.30	4.5 0.26	1.1 0.03	0.0 0.00	87 1.43	1.0 0.01	0.0 0.00	0.0 0.00	0.1 0.00	0.1	32		105	14	62	0	USAC	
			165		15 0.74	9.0 0.68	1.3 0.03	0.0 0.00	95 1.55	0.0 0.00	4.0 0.10	0.0 0.00	0.1 0.00	0.0	25		105	11	71	0	USAC		
			160		21 1.04	4.0 0.30	6.7 0.29	0.9 0.03	97 1.58	1.0 0.02	0.0 0.00	0.0 0.00	0.1 0.00	0.0	31		112	17	67	0	USAC		
			250		31 1.55	5.0 0.38	2.5 0.24	0.0 0.00	113 1.85	0.0 0.00	10 0.28	0.9 0.01	0.1 0.00	0.0	32		143	11	97	4	USAC		
State of California Dom.		9-25-62	120	7.7	12 0.61	2.0 0.20	4.5 0.26	2.5 0.06	0.0 0.00	57 0.94	1.0 0.01	4.0 0.10	0.9 0.01	0.1 0.00	0.1	24		79	19	41	0	USAC	

a. Determined by addition of constituents.

b. Gravimetric determination.

c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.

d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as mg/l except as shown.

QUALITY OF GROUND WATERS IN CALIFORNIA
ANALYSES OF GROUND WATER
1962

Owner and use	State well number and other number	Date sampled	Temp in °F	Specific conductance (micro-mhos at 25° C)	pH	Mineral constituents in parts per million										Total dissolved solids in ppm	Per cent sodium	Hardness as CaCO ₃		Analyzed by c		
						equivalents per million												Total ppm	N.C. ppm			
						Calcium (Ca)	Magne-sium (Mg)	Sodium (Na)	Potas-sium (K)	Carbon-ate (CO ₃)	Bicar-bonate (HCO ₃)	Sul-fate (SO ₄)	Chlo-ride (Cl)	Ni-tro-le (NO ₃)	Fluo-ride (F)						Boron (B)	Silico (SiO ₂)
						TOPAZ VALLEY 6-7																
D. Redley Dom.	8N/23E-16P1	9-18-62		269	8.4	24 1.20	6.8 0.56	23 1.00	3.0 0.08	5 0.17	141 2.31	7.9 0.16	2.9 0.08	11 0.18	0.2 0.01	0.13	30	Al 0.03 Zn 0.08	183	35	88 0	DMR
H. W. Huffman Dom.	-28E3	9-18-62		285	7.7	19 0.95	1.8 0.13	33 1.44	1.6 0.04	0.0 0.00	80 1.31	40 0.83	13 0.37	1.3 0.02	2.7 0.14	0.35	28	Fe 0.01 Zn 0.50	180	56	55 0	DMR
Mono Co. Road Dept. Dom.	-29C2	9-18-62		128	7.6	12 0.60	3.4 0.28	10 0.44	1.5 0.04	0.0 0.00	71 1.16	4.8 0.10	2.3 0.06	0.2 0.00	0.1 0.00	0.05	10	Al 0.11 Mn 0.03 Zn 0.38	79	32	44 0	DMR
H. Williams Dom.	9N/22E-24D	9-18-62		242	8.0	22 1.10	5.6 0.46	17 0.74	2.8 0.07	0.0 0.00	108 1.77	4.6 0.10	11 0.31	3.5 0.06	0.4 0.02	0.48	25	Fe 0.01 Al 0.04 Cu 0.02 Zn 0.25	145	31	78 0	DMR
E. Kinzy Dom.	-24K1	9-18-62		222	8.0	20 1.00	5.6 0.46	18 0.78	2.3 0.06	0.0 0.00	112 1.84	6.9 0.14	3.4 0.10	4.1 0.07	0.4 0.02	0.11	27	Al 0.05 Zn 0.01	143	34	73 0	DMR
East Camp Ranch Dom.	9N/23E-20P1	9-18-62		306	8.3	32 1.60	6.3 0.52	26 1.13	1.2 0.03	0.0 0.00	173 2.84	7.2 0.15	2.4 0.07	4.0 0.06	0.6 0.03	0.27	48	As 0.06	213	34	106 0	DMR
A. Sciarani Dom.	-30C2	9-18-62		331	7.9	14 0.70	1.4 0.12	49 2.13	2.2 0.06	0.0 0.00	90 1.48	1.6 0.33	39 1.10	0.5 0.01	3.6 0.19	2.9	33	Fe 0.03 Al 0.01 As 0.09 Zn 0.12	206	71	41 0	DMR
Bellview Ranch Dom.	-32A1	9-18-62		320	8.2	14 0.70	3.4 0.28	51 2.22	2.2 0.06	0.0 0.00	173 2.84	9.4 0.20	3.4 0.10	2.7 0.04	2.4 0.13	0.51	29	As 0.01 ^d	203	68	49 0	DMR
						BRIDGEPORT VALLEY 6-8																
Buckeye Hot Springs	4N/24E-4A1	9-18-62	126	1450	8.7	11 0.55	2.6 0.21	325 14.14	22 0.56	14 0.47	368 6.03	348 7.24	30 0.85	0.3 0.00	8.8 0.46	1.1	95		1040	91	38 0	DMR
Hunewill Ranch Dom.	-13E1	9-18-62		106	7.8	12 0.60	2.9 0.24	4.7 0.20	1.5 0.04	0.0 0.00	98 0.95	4.4 0.09	0.5 0.01	0.7 0.01	0.1 0.00	0.03	22	Al 0.01 Cu 0.01 Zn 0.21 ^d	77	18	42 0	DMR
F. Carner Dom.	4N/25E-4B1	9-18-62		795	8.4	53 2.64	18 1.46	88 3.83	13 0.33	0.0 0.00	164 2.69	234 4.87	22 0.62	0.3 0.00	0.3 0.02	0.31	97	Fe 0.07 Zn 0.17	607	46	205 71	DMR
R. Snider Dom.	5N/24E-25G1	9-18-62		135	8.1	15 0.75	3.8 0.31	6.6 0.29	1.9 0.05	0.0 0.00	78 1.28	3.6 0.07	1.1 0.03	0.1 0.00	0.1 0.00	0.01	21	Zn 0.13	91	21	53 0	DMR
K. C. Stewart Dom.	5N/25E-28K1	9-18-62		456	8.5	37 1.85	14 1.19	38 1.65	11 0.28	2 0.07	225 3.69	42 0.87	6.7 0.19	1.9 0.03	0.2 0.01	0.11	50	Zn 0.11	314	33	152 0	DMR
Bridgeport P.U.D. Mun.	-28Q1	9-18-62		344	8.4	26 1.30	10 0.84	28 1.22	9.6 0.24	0.0 0.00	178 2.92	22 0.46	5.0 0.14	2.0 0.03	0.2 0.01	0.09	57	As 0.14 Zn 0.12	248	34	107 0	DMR

a. Determined by addition of constituents.
b. Gravimetric determination.
c. Analysis by U.S. Geological Survey, Quality of Water Branch (U.S.G.S.), Pacific Chemical Consultants (P.C.C.), or State Department of Water Resources (D.W.R.) as indicated.
d. Iron (Fe), Aluminum (Al), Arsenic (As), Copper (Cu), Lead (Pb), Manganese (Mn), Zinc (Zn), reported here as $\frac{\text{ppm}}{100}$ except as shown.

APPENDIX C

ANALYSES FOR RADIOACTIVITY
GROUND WATERS
NORTHERN AND CENTRAL CALIFORNIA
1961 and 1962

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER
1959

Well number	Date sampled	Gross activity ^a	Date analyzed
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PITTSBURG PLAIN (2-4)

2N/1E-7R2	6-8-62	3.2 ± 3.7	8-17-62
-22C1	6-8-62	3.7 ± 3.7	8-17-62
2N/2E-20A1	6-8-62	2.8 ± 3.7	8-17-62

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER

1962

Well number	Date sampled	Gross activity ^a	Date analyzed
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SAN FRANCISCO BAY REGION (NO. 2)

CLAYTON VALLEY (2-5)

1N/1W-4A1	7-11-62	0 \pm 3.8	8-9-62
1N/1W-4R1	7-11-62	0 \pm 3.9	8-9-62
2N/1W-30J1	7-10-62	5.5 \pm 3.4	9-12-62
2N/1W-30K1	7-10-62	0 \pm 3.8	8-9-62
2N/1W-31D1	7-10-62	0 \pm 3.8	8-9-62
2N/2W-13P1	7-10-62	2.4 \pm 3.9	8-9-62
2N/2W-26B1	7-10-62	2.9 \pm 3.9	8-9-62
2N/2W-36J1	7-11-62	1.0 \pm 3.4	7-11-62

YGNACIO VALLEY (2-6)

1N/1W-7K1	7-11-62	0 \pm 3.9	8-9-62
1N/1W-29G1	7-11-62	0 \pm 3.8	8-9-62
1N/2W-11N1	7-11-62	4.0 \pm 3.9	8-9-62
1N/2W-13P1	7-11-62	1.9 \pm 4.0	8-9-62
2N/2W-27R1	7-10-62	0 \pm 3.9	8-9-62
2N/2W-36E1	7-10-62	0.4 \pm 4.0	8-9-62

SANTA CLARA VALLEY (2-9)

6S/1W-16A1	8-62	0 \pm 3.4	10-8-62
6S/1W-14E1	8-62	0 \pm 3.3	10-8-62
6S/1W-17M2	8-62	0 \pm 3.4	10-8-62

^a - Micromicrocuries per liter

SANTA CLARA VALLEY-EAST BAY (2-9) 1961

[illegible]

QUALITY OF GROUND WATERS IN CALIFORNIA

RADIOASSAY OF GROUND WATER

SANTA CLARA VALLEY - EAST BAY (2-9)

1962

[illegible]

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER

1962

Well number	Date sampled	Gross activity ^a	Date analyzed
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SANTA CLARA VALLEY (2-9) (Cont.)

6S/1W-26D2	9-13-62	2.0 \pm 3.3	10-8-62
6S/1W-28R1	8-62	0 \pm 3.3	10-8-62
6S/1W-29C1	8-62	0 \pm 3.2	10-8-62
6S/1W-30M1	8-62	0 \pm 3.4	10-8-62
6S/1E-7C1	8-62	1.8 \pm 3.3	10-8-62
6S/1E-11B1	8-62	0 \pm 3.3	10-8-62
6S/1E-21G1	8-62	0 \pm 3.3	10-8-62
6S/2W-9H1	8-62	0 \pm 3.3	10-8-62
6S/2W-9K2	8-62	0 \pm 3.2	10-8-62
6S/2W-20N1	8-62	0 \pm 3.1	10-8-62
6S/2W-21A	8-62	0 \pm 3.2	10-8-62
6S/2W-24M3	8-62	0 \pm 3.4	10-8-62
6S/2W-29D2	8-62	0 \pm 3.2	10-8-62
6S/2W-34M1	8-62	0 \pm 3.2	10-8-62
6S/2W-36H2	8-62	0 \pm 3.3	10-8-62
7S/1W-5L	8-62	0 \pm 3.1	10-8-62

LIVERMORE VALLEY (2-10)

2S/2W-27K1	4-11-62	0 \pm 4.0	5-11-62
2S/2W-35G2	4-11-62	0 \pm 3.84	5-11-62
3S/2E-8H1	4-11-62	0 \pm 3.8	5-11-62
4S/1E-3K1	4-4-62	0 \pm 3.9	5-11-62

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER

1962

Well number	Date sampled	Gross activity ^a	Date analyzed
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LIVERMORE VALLEY (2-10) (Cont.)

4S/1E-10G1	4-10-62	1.28 \pm 4.2	5-11-62
4S/1E-10H1	4-10-62	36.31 \pm 4.6	5-11-62

CENTRAL COASTAL REGION (NO. 3)

PAJARO VALLEY (3-2)

12S/2E-30E1	7-23-62	0 \pm 3.4	10-22-62
12S/2E-30N1	7-23-62	0 \pm 3.4	10-8-62
12S/2E-31C1	7-23-62	0 \pm 3.3	10-8-62
12S/2E-31K1	7-24-62	0 \pm 3.4	10-8-62
12S/2E-32C1	7-24-62	5.1 \pm 3.5	9-26-62
13S/1E-1A1	7-23-62	0 \pm 3.4	10-8-62
13S/2E-1K1	7-31-62	1.6 \pm 3.5	9-26-62
13S/2E-6E2	7-24-62	4.2 \pm 3.5	9-26-62

SALINAS VALLEY (3-4)

13S/2E-10J1	7-31-62	-0 \pm 3.4	9-26-62
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CARMEL VALLEY (3-7)

15S/1E-22C1	7-11-62	-0 \pm 3.4	9-26-62
15S/1E-23G1	7-11-62	-0 \pm 3.4	9-26-62
15S/1E-26N2	7-11-62	3.3 \pm 3.9	9-26-62

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER

1962

Well number	Date sampled	Gross activity ^a	Date analyzed
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CARMEL VALLEY (3-7) (Cont.)

16S/1W-13L2	7-11-62	-0 \pm 3.3	9-26-62
16S/1E-16L1	7-10-62	1.6 \pm 3.4	9-26-62
16S/1E-16N1	7-10-62	-0 \pm 3.5	9-26-62
16S/1E-17G1	7-10-62	-0 \pm 3.4	9-26-62
16S/1E-18K1	7-11-62	3.2 \pm 3.4	9-26-62
16S/1E-23F1	7-10-62	2.1 \pm 3.4	9-26-62
16S/1E-25B1	7-9-62	0.1 \pm 3.4	9-26-62

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER
1959

Well number	Date sampled	Gross activity ^a	Date analyzed
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SACRAMENTO VALLEY (5-21)

Placer County

10N/5E-6D1	8-3-62	0.0 \pm 3.6	8-17-62
10N/6E-5C	8-3-62	0.0 \pm 3.5	8-20-62
-10D	8-3-62	0.0 \pm 3.3	9-12-62
11N/5E-6A1	8-3-62	0.3 \pm 3.6	8-20-62
-18H	8-3-62	1.8 \pm 3.5	9-12-62
-31A1	8-3-62	0.0 \pm 3.3	9-11-62
11N/6E-16M	8-3-62	0.0 \pm 3.6	8-20-62
-27Q	8-3-62	0.4 \pm 3.5	9-26-62
-34B	8-3-62	0.0 \pm 3.5	8-20-62
12N/5E-2B1	8-3-62	5.2 \pm 3.4	9-12-62
-3D	8-3-62	4.2 \pm 3.6	9-26-62
-23C1	8-3-62	2.2 \pm 3.6	8-17-62
12N/6E-16D2	8-3-62	5.3 \pm 3.6	8-17-62
13N/5E-13D	8-3-62	2.1 \pm 3.6	9-12-62
-24P1	8-3-62	3.2 \pm 3.6	8-20-62
13N/6E-6D	8-3-62	0.0 \pm 3.5	8-20-62
-16D	8-3-62	0.0 \pm 3.6	8-17-62
-33C1	8-3-62	0.0 \pm 3.5	8-20-62

Sacramento County

4N/3E-13J1	11-20-62	8.3 \pm 3.7	1-28-63
-14F1	8-23-62	6.1 \pm 3.7	1-28-63

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER
1959

Well number	Date sampled	Gross activity ^a	Date analyzed
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Sacramento County (Con't.)

-22Q	8-23-62	5.1 \pm 3.7	1-28-63
5N/7E-7E2	9-26-62	0.0 \pm 3.5	1-24-63
6N/7E-23A1	8-30-62	5.4 \pm 3.7	1-29-63
6N/8E-15J1	8-30-62	1.3 \pm 3.6	1-24-63
7N/4E-4R1	8-23-62	1.0 \pm 3.5	1-28-63
7N/5E-7C1	9-26-62	0.0 \pm 3.5	1-24-63
7N/6E-22R1	9-25-62	0.0 \pm 3.5	1-24-63
7N/7E-27B1	8-29-62	4.2 \pm 3.6	1-28-63
8N/5E-15H1	9-26-62	1.7 \pm 3.6	1-24-63
8N/8E-29K1	8-29-62	7.6 \pm 3.6	1-28-63
9N/4E-1R1	8-31-62	0.4 \pm 3.6	1-24-63
-8L1	8-16-62	2.1 \pm 3.5	1-28-63
-27F1	10-5-62	2.5 \pm 3.6	1-24-63
9N/5E-21E1	8-31-62	0.0 \pm 3.5	1-24-63
9N/7E-21D1	8-10-62	1.6 \pm 3.4	9-26-62
-26H1	8-10-62	0.0 \pm 3.4	9-26-62
-28K1	8-17-62	0.0 \pm 3.4	9-26-62
-32B1	8-10-62	0.0 \pm 3.4	9-26-62
-33E1	8-10-62	0.0 \pm 3.4	9-26-62
10N/4E-13P1	8-16-62	0.7 \pm 3.5	1-28-63
10N/6E-27L	10-9-62	2.8 \pm 3.5	1-24-63

Sutter County

12N/2E-9P2	6-12-62	0.0 \pm 3.5	8-20-62
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QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER
1959

Well number	Date sampled	Gross activity ^a	Date analyzed
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Sutter County (Cont'd.)

-11N1	6-12-62	0.0 \pm 3.7	8-17-62
-14B1	6-12-62	0.0 \pm 3.5	9-12-62
-16R1	6-21-62	2.4 \pm 3.6	8-20-62
-23Q1	6-12-62	9.5 \pm 3.6	8-17-62
-26A1	6-12-62	3.3 \pm 3.6	8-17-62 .
13N/3E-10M2	6-12-62	0.0 \pm 3.5	8-20-62
-11Q3	6-8-62	0.0 \pm 3.2	9-11-62
-13C1	6-8-62	0.0 \pm 3.6	8-17-62
-16R1	6-20-62	0.0 \pm 3.4	9-12-62
-24D1	6-8-62	0.0 \pm 3.5	9-12-62
13N/4E-21A1	6-13-62	0.0 \pm 3.5	8-17-62
-23Q1	6-13-62	0.4 \pm 3.5	9-12-62
13N/5E-7R3	6-26-62	0.0 \pm 3.5	8-20-62
-9R1	6-13-62	0.0 \pm 3.2	10-8-62
-19R2	6-13-62	0.7 \pm 3.4	9-12-62
-33L1	6-27-62	1.4 \pm 3.3	9-11-62
14N/1E-1A1	6-12-62	0.3 \pm 3.5	8-20-62
-2A1	6-12-62	0.0 \pm 3.6	8-20-62
14N/3E-3G2	6-12-62	0.0 \pm 3.5	8-17-62
-5A3	6-12-62	0.0 \pm 3.6	8-20-62
-14E2	6-29-62	0.0 \pm 3.4	8-17-62
-15H1	6-13-62	5.0 \pm 3.4	9-12-62
-16B2	6-7-62	0.0 \pm 3.5	8-17-62
-18A2	6-21-62	0.0 \pm 3.6	8-20-62

^a - Micromicrocuries per liter

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER
1959

Well number	Date sampled	Gross activity ^a	Date analyzed
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Sutter County (Con't.)

-23M2	6-8-62	0.0 \pm 3.5	8-20-62
-28R1	6-29-62	0.9 \pm 3.6	8-20-62
15N/2E-26D2	6-7-62	0.0 \pm 3.2	9-11-62
15N/3E-4C2	6-12-62	1.0 \pm 3.6	8-20-62
-26M1	6-20-62	1.7 \pm 3.4	9-12-62
-29G1	6-20-62	0.0 \pm 3.6	8-17-62

QUALITY OF GROUND WATERS IN CALIFORNIA

RADIOASSAY OF GROUND WATER

1962

Stanislaus County

Well number	Date sampled	Gross activity ^a	Date analyzed
MDB&M			
3S/7E-13A2	7/13/62	0 ± 3.7	8/17/62
3S/7E-24J	7/13/62	1.3 ± 3.4	9/11/62
3S/8E-6N1	7/13/62	4.0 ± 3.7	8/17/62
3S/8E-9C1	7/13/62	0.02 ± 3.7	8/17/62
3S/8E-20J	7/13/62	9.4 ± 3.8	8/17/62
3S/8E-23E1	8/15/62	6.0 ± 3.4	9/26/62
3S/9E-6R	7/18/62	2.3 ± 3.7	8/17/62
4S/7E-16E1	7/18/62	0 ± 3.6	8/17/62
4S/7E-17K1	7/18/62	0 ± 3.6	8/17/62
4S/7E-18A1	7/18/62	0 ± 3.6	8/17/62
4S/7E-26R	7/24/62	1.6 ± 3.4	9/12/62
4S/7E-34J1	7/18/62	0.6 ± 3.4	9/12/62
4S/8E-5L	7/18/62	15.9 ± 3.9	8/17/62
4S/8E-24A1	8/16/62	9.5 ± 3.5	10/22/62
4S/8E-27L1	8/27/62	22.3 ± 3.7	10/22/62
4S/9E-20A1	8/16/62	7.2 ± 3.5	10/22/62
4S/9E-25A1	8/24/62	1.2 ± 3.2	10/30/62
4S/9E-30R1	8/27/62	28.7 ± 3.8	10/22/62
4S/11E-21D1	8/16/62	0 ± 3.4	10/22/62
4S/11E-31E1	8/24/62	2.6 ± 3.2	10/30/62
5S/7E-9H1	7/18/62	0 ± 3.0	9/11/62
5S/7E-23B	7/18/62	11.5 ± 4.0	8/9/62

^a - Micromicrocuries per liter

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER
1962

Stanislaus County (continued)

Well number	Date sampled	Gross activity ^a	Date analyzed
MDB&M			
5S/7E-35A1	7/24/62	2.8 \pm 3.3	9/11/62
5S/8E-1R1	8/28/62	0.9 \pm 3.2	10/30/62
5S/9E-9A1	8/28/62	13.2 \pm 3.6	10/11/62
5S/9E-13G1	8/22/62	14.3 \pm 3.6	10/22/62
5S/10E-4F1	8/24/62	4.6 \pm 3.3	10/30/62
5S/10E-23E1	7/13/62	9.2 \pm 3.7	8/20/62
5S/10E-28H1	8/20/62	1.1 \pm 3.2	10/30/62
5S/10E-30F1	8/22/62	21.3 \pm 3.7	10/22/62
5S/11E-7P1	8/20/62	2.3 \pm 3.5	10/22/62

a - Micromicrocuries per liter

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER

1962

Merced County

Well number	Date sampled	Gross activity ^a	Date analyzed
MDB&M			
4S/14E-8J	7/10/62	0 ± 3.6	8/17/62
5S/11E-29F1	8/20/62	0 ± 3.4	10/22/62
5S/14E-3P	7/10/62	0 ± 3.6	8/17/62
6S/10E-2H1	8/22/62	2.6 ± 3.2	10/30/62
6S/10E-9B1	8/22/62	26.4 ± 3.7	10/22/62
6S/10E-24L1	8/22/62	9.6 ± 3.4	10/30/62
6S/10E-28K1	8/20/62	6.4 ± 3.3	10/30/62
6S/11E/3B1	8/16/62	8.8 ± 3.5	10/22/62
6S/11E-9C1	8/24/62	10.4 ± 3.4	10/30/62
6S/12E-6L1	9/10/62	0 ± 3.2	10/30/62
8S/10E-29D	7/11/62	0 ± 3.6	8/20/62
9S/11E-7N1	7/11/62	0 ± 3.6	8/20/62
9S/11E-26N1	7/11/62	0.9 ± 3.6	8/20/62
9S/12E-17B	7/11/62	6.2 ± 3.4	9/12/62
9S/13E-8G	7/11/62	2.4 ± 3.7	8/17/62
9S/13E-29L	7/11/62	4.3 ± 3.4	9/12/62
9S/14E-20B	7/11/62	3.4 ± 3.6	8/17/62

a - Micromicrocuries per liter

QUALITY OF GROUND WATERS IN CALIFORNIA

RADIOASSAY OF GROUND WATER

1962

Kings County

Well number	Date sampled	Gross activity ^a	Date analyzed
MDB&M			
17S/22E-2H	8/13/62	2.0 \pm 3.2	10/11/62
18S/19E-6G1	8/30/62	10.6 \pm 3.4	10/22/62
18S/19E-26H1	8/15/62	17.4 \pm 3.6	10/11/62
18S/21E-14F1	8/29/62	1.2 \pm 3.3	10/20/62
19S/19E-15N1	8/15/62	2.6 \pm 3.4	10/11/62
19S/19E-25L	8/24/62	6.5 \pm 3.4	10/22/62
19S/20E-33A1	8/14/62	46.8 \pm 3.9	10/22/62
19S/21E-3B1	8/14/62	11.8 \pm 3.5	10/22/62
19S/23E-8H1	8/16/62	0 \pm 3.3	10/11/62
20S/20E-10L1	8/15/62	0 \pm 3.4	10/11/62
20S/21E-12A1	8/16/62	21.6 \pm 3.6	10/11/62
20S/21E-16D	8/14/62	0 \pm 3.3	10/22/62
20S/22E-1A1	8/16/62	1.4 \pm 3.4	10/11/62
21S/18E-1D1	8/15/62	0 \pm 3.4	10/11/62
21S/18E-17M1	8/23/62	0 \pm 3.3	10/11/62
21S/21E-1A2	8/23/62	5.1 \pm 3.4	10/11/62
21S/22E-13G1	8/20/62	0 \pm 3.3	10/30/62
21S/22E-22M2	8/20/62	0 \pm 3.2	10/30/62
22S/17E-15M2	8/23/62	0.4 \pm 3.4	10/11/62
22S/19E-20N	8/20/62	0 \pm 3.3	10/11/62
22S/22E-10A1	8/20/62	0 \pm 3.2	10/30/62
23S/18E-29E1	8/23/62	0 \pm 3.2	10/11/62

^a - Micromicrocuries per liter

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER
1962

Kings County (continued)

Well number	Date sampled	Gross activity ^a	Date analyzed
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MDB&M

23S/21E-18D1	8/20/62	0.7 \pm 3.2	10/11/62
24S/18E-19Q1	8/29/62	0 \pm 3.4	10/30/62
24S/19E-30N1	8/23/62	1.0 \pm 3.3	10/11/62
24S/22E-35N1	8/24/62	7.0 \pm 3.4	10/22/62

^a - Micromicrocuries per liter

QUALITY OF GROUND WATERS IN CALIFORNIA

RADIOASSAY OF GROUND WATER

1962

Tulare County

Well number	Date sampled	Gross activity ^a	Date analyzed
MDB&M			
16S/24E-3J1	7/26/62	0 \pm 3.3	10/22/62
16S/25E-32N	8/1/62	4.8 \pm 3.4	10/22/62
17S/23E-8H1	6/18/62	16.5 \pm 3.5	10/11/62
17S/24E-15A2	6/21/62	0 \pm 3.3	10/22/62
17S/25E-34P	7/3/62	5.0 \pm 3.4	10/22/62
18S/24E-19M1	6/18/62	12.5 \pm 3.1	10/11/62
18S/26E-10N	7/24/62	5.9 \pm 3.3	10/30/62
19S/23E-24G1	6/18/62	0.2 \pm 3.3	10/11/62
19S/24E-22C1	6/21/62	0 \pm 3.4	10/30/62
19S/25E-31J1	6/18/62	1.3 \pm 3.3	10/22/62
19S/26E-3K1	6/18/62	0 \pm 3.3	10/22/62
19S/26E-26M1	6/18/62	0 \pm 3.4	10/22/62
20S/23E-27R	7/24/62	1.3 \pm 3.3	10/30/62
20S/26E-3F1	8/14/62	2.8 \pm 3.4	9/26/62
20S/26E-5R1	7/10/62	0 \pm 3.1	10/30/62
20S/26E-19F	6/25/62	0 \pm 3.4	10/22/62
20S/27E-13A1	9/12/62	0.7 \pm 3.3	10/22/62
20S/27E-31J1	8/14/62	0 \pm 3.4	10/8/62
21S/23E-22A	9/27/62	5.7 \pm 3.3	10/11/62
21S/24E-10N1	7/3/62	3.7 \pm 3.5	10/22/62
21S/27E-15P2	7/31/62	0 \pm 3.3	10/11/62
21S/27E-27F1	8/14/62	7.3 \pm 3.5	9/26/62
22S/23E-6A1	8/2/62	0 \pm 3.3	10/30/62

a - Micromicrocuries per liter

QUALITY OF GROUND WATERS IN CALIFORNIA

RADIOASSAY OF GROUND WATER

1962

Tulare County (continued)

Well number	Date sampled	Gross activity ^a	Date analyzed
MDB&M			
22S/25E-22A	6/21/62	0 \pm 3.4	10/30/62
22S/26E-16M1	9/12/62	0 \pm 3.2	10/30/62
22S/27E-11C1	7/31/62	3.1 \pm 3.4	10/11/62
23S/23E-32N1	7/26/62	8.5 \pm 3.4	10/22/62
23S/24E-32P	8/20/62	5.4 \pm 3.4	10/22/62
23S/25E-9F1	7/26/62	0.6 \pm 3.3	10/22/62
23S/27E-21H	9/12/62	0 \pm 3.2	10/30/62
23S/27E-27G1	9/12/62	1.8 \pm 3.3	10/30/62
24S/23E-8D	7/26/62	0 \pm 3.3	10/22/62
24S/25E-23H1	9/12/62	0 \pm 3.3	10/22/62
24S/26E-31L2	9/12/62	5.8 \pm 3.3	10/30/62
24S/27E-32P1	9/12/62	0 \pm 3.2	10/30/62

^a - Micromicrocuries per liter

QUALITY OF GROUND WATERS IN CALIFORNIA
RADIOASSAY OF GROUND WATER
1959

Well number	Date sampled	Gross activity ^a	Date analyzed
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NORTH TAHOE VALLEY 6-5.02

14N/16E-1C1	9-24-62	0.0 \pm 3.2	10-8-62
-1K1	9-24-62	1.4 \pm 3.6	10-11-62
14N/17E-8N1	9-24-62	0.0 \pm 3.5	10-11-62
15N/16E-24A1	9-24-62	0.0 \pm 3.5	10-11-62
-25C1	9-24-62	0.0 \pm 3.5	10-11-62
15N/17E-6J1	9-24-62	0.0 \pm 3.3	10-11-62
-7E1	9-24-62	0.0 \pm 3.2	10-8-62
16N/16E-28E1	9-25-62	0.0 \pm 3.2	10-8-62
-32D1	9-25-62	0.0 \pm 3.2	10-8-62
-32D2	9-25-62	0.0 \pm 3.4	10-11-62
16N/17E-13B1	9-24-62	0.0 \pm 3.2	10-11-62
-14B1	9-24-62	0.1 \pm 3.4	10-11-62
-14C1	9-24-62	0.0 \pm 3.4	10-11-62
16N/18E-30B1	9-24-62	3.3 \pm 3.4	10-11-62

TRUCKEE VALLEY 6-6.7

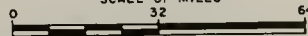
17N/16E-7N1	9-25-62	1.1 \pm 3.4	10-11-62
-8M1	9-25-62	0.0 \pm 3.4	10-11-62
-14F1	9-25-62	0.0 \pm 3.3	10-8-62
-15G1	9-25-62	0.0 \pm 3.2	10-11-62
-16L1	9-25-62	0.0 \pm 3.2	10-8-62
-17F1	9-25-62	0.0 \pm 3.3	10-11-62

^a - Micromicrocuries per liter

MONITORED AREAS

1961 - 1962

SCALE OF MILES



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NORTH COASTAL REGION (NO. 1)

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- 1-5 SCOTT RIVER VALLEY
- 1-6 HAYFORK VALLEY
- 1-8 MAD RIVER VALLEY
- 1-9 EUREKA PLAIN
- 1-10 EEL RIVER VALLEY
- 1-11 ROUND VALLEY
- 1-15 UKIAH VALLEY
- 1-16 SANEL VALLEY
- 1-17 ALEXANDER VALLEY
- 1-18 SANTA ROSA VALLEY

SAN FRANCISCO BAY REGION (NO. 2)

- 2-1 PETALUMA VALLEY
- 2-2 NAPA-SONOMA VALLEY
- 2-3 SUISUN-FAIRFIELD VALLEY
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- 2-5 CLAYTON VALLEY
- 2-6 YGNACIO VALLEY
- 2-9 SANTA CLARA VALLEY
- EAST BAY AREA
- SOUTH BAY AREA
- 2-10 LIVERMORE VALLEY

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- 3-3 GILROY-HOLLISTER BASIN
- 3-4 SALINAS VALLEY
- 3-7 CARMEL VALLEY

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- 5-2 ALTURAS BASIN
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- 5-5 FALL RIVER VALLEY
- 5-6 REDDING BASIN
- 5-7 LAKE ALMANOR VALLEY
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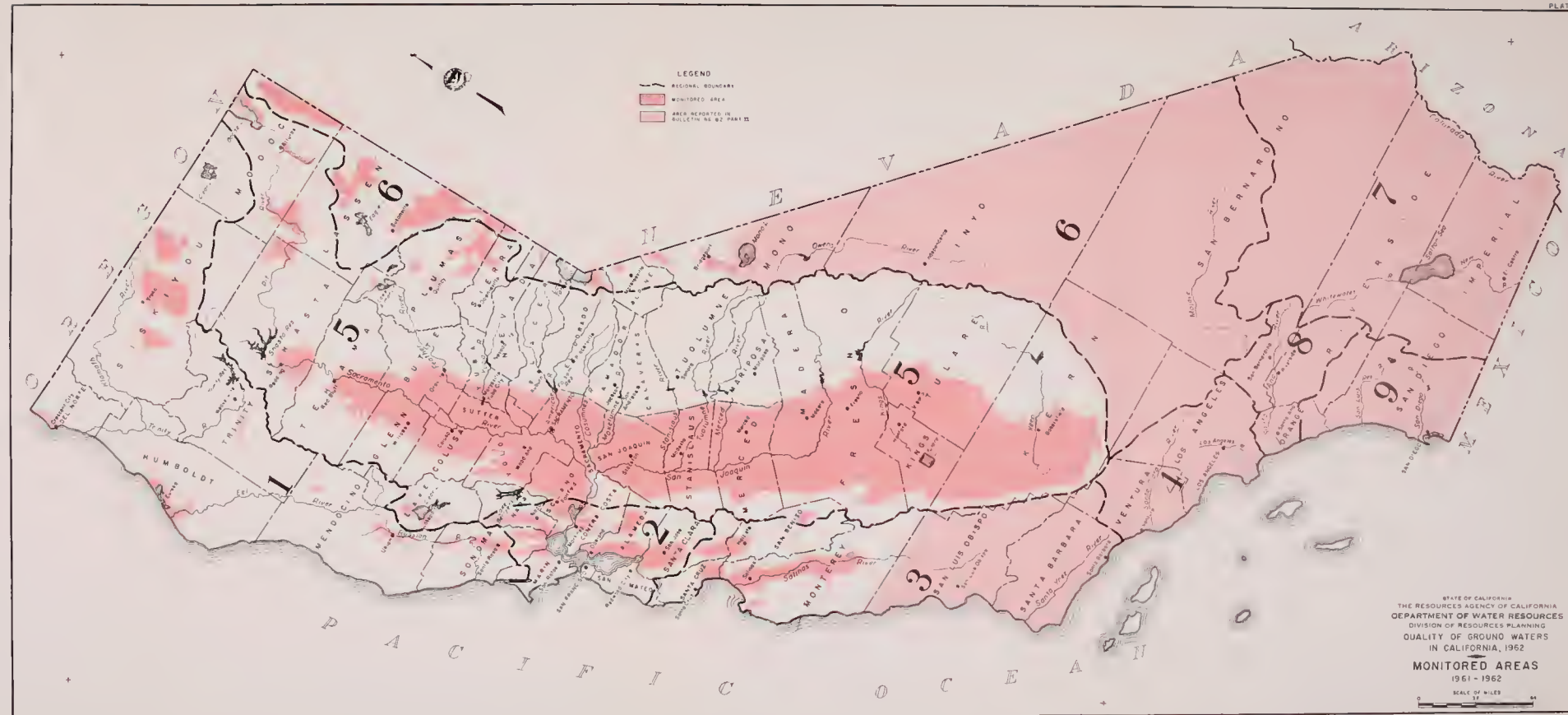
- 5-11 MOHAWK VALLEY
- 5-12 SIERRA VALLEY
- 5-13 UPPER LAKE VALLEY
- 5-15 KELSEYVILLE VALLEY
- 5-21 SACRAMENTO VALLEY

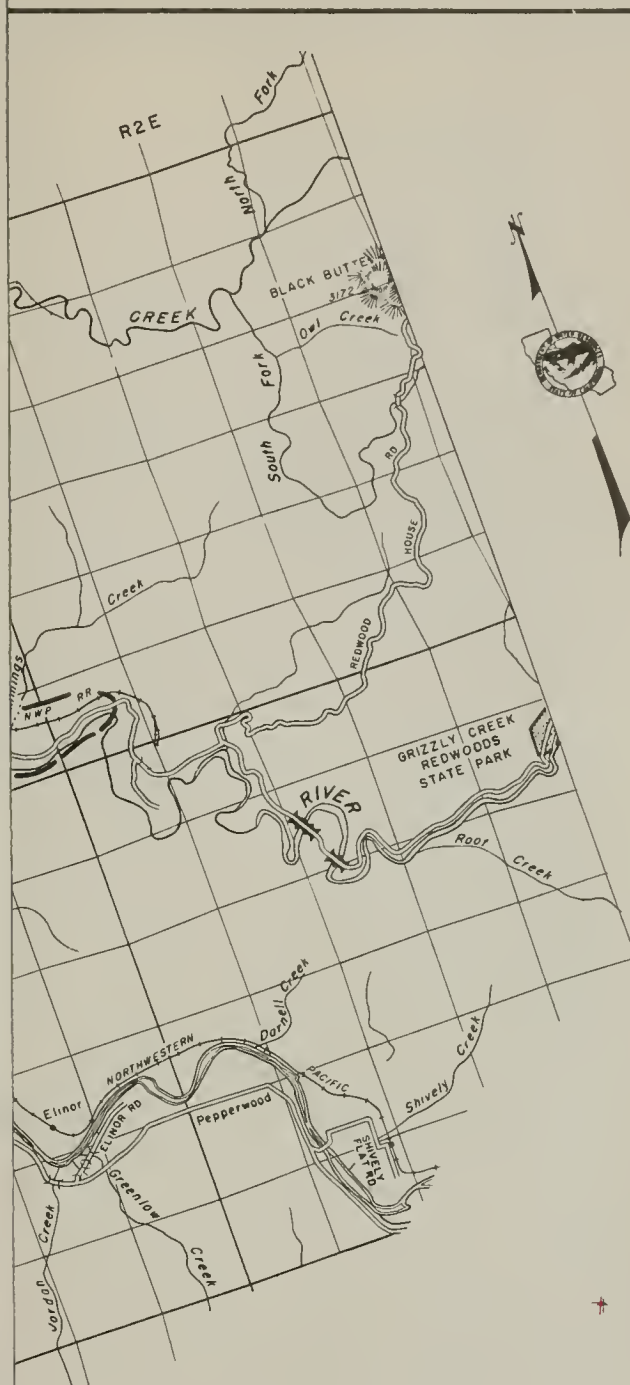
- TEHAMA COUNTY
- GLENN COUNTY
- BUTTE COUNTY
- COLUSA COUNTY
- SUTTER COUNTY
- YUBA COUNTY
- PLACER COUNTY
- YOLO COUNTY
- SACRAMENTO COUNTY
- SOLANO COUNTY

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- SAN JOAQUIN COUNTY
- STANISLAUS COUNTY
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- KINGS COUNTY
- KERN COUNTY
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- 6-5.01 SOUTH TAHOE VALLEY
- 6-5.02 NORTH TAHOE VALLEY
- 6-6 CARSON VALLEY
- 6-67 TRUCKEE VALLEY
- 6-7 TOPAZ VALLEY
- 6-8 BRIDGEPORT VALLEY





IT OF MONITORED AREA
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GROUND WATERS, 1962

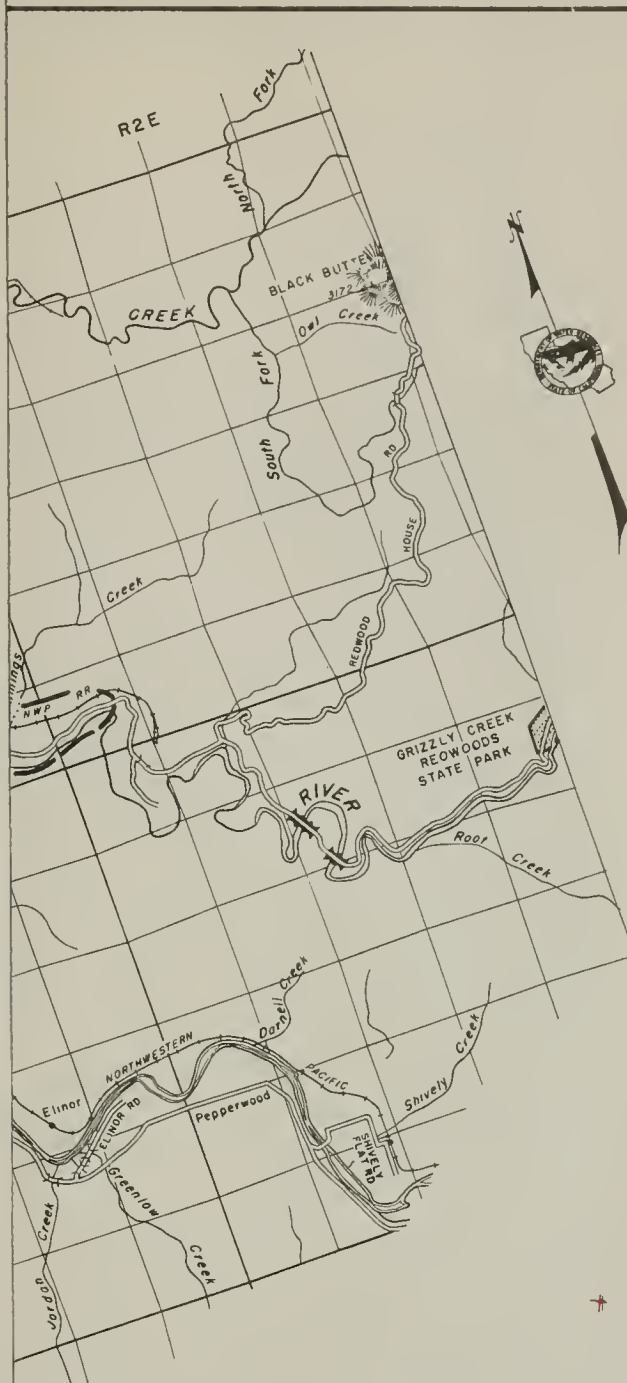
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1/16 section,

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962
EEL RIVER VALLEY

SCALE OF MILES
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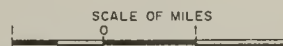
IT OF MONITORED AREA
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GROUND WATERS, 1962

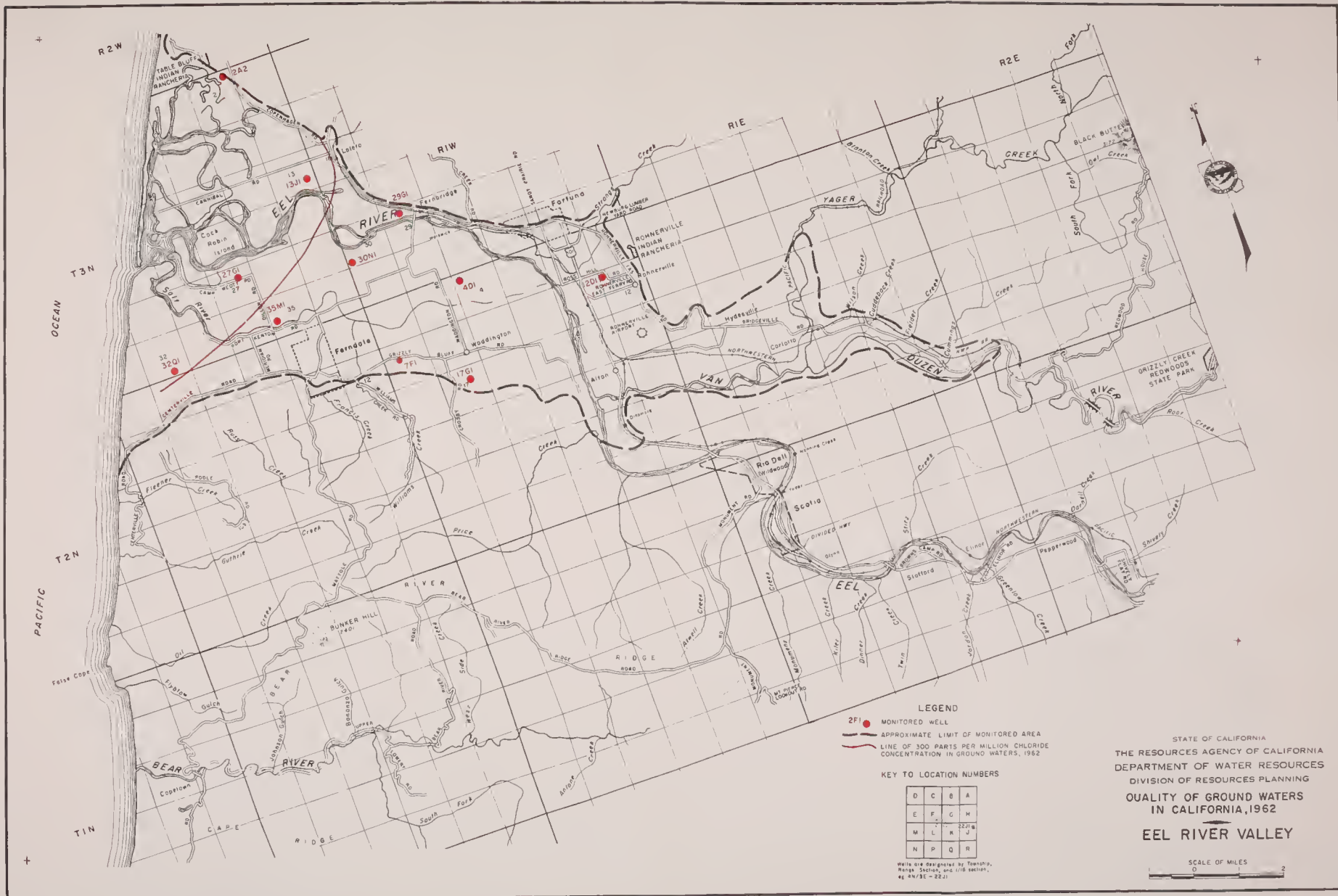
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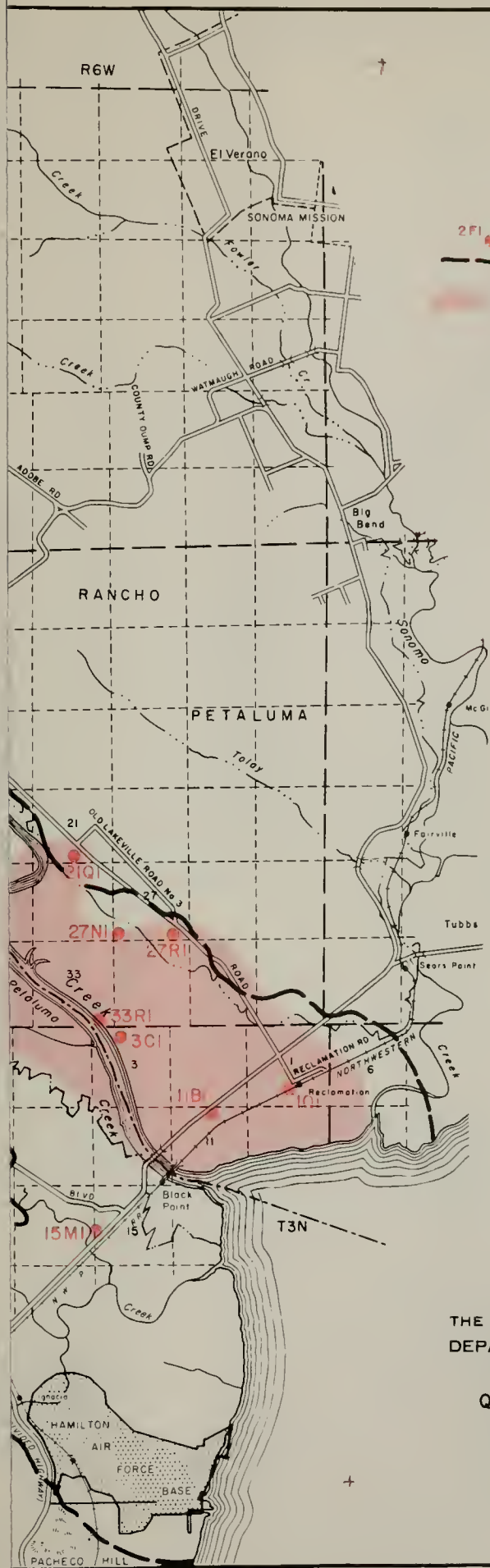
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1/16 section;

STATE OF CALIFORNIA
THE RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962
EEL RIVER VALLEY







LEGEND

- 27N1 MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA
- AREAS OF CHLORIDE CONCENTRATION GREATER THAN 100 ppm

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

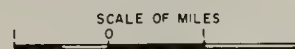
Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/SE - 22J1

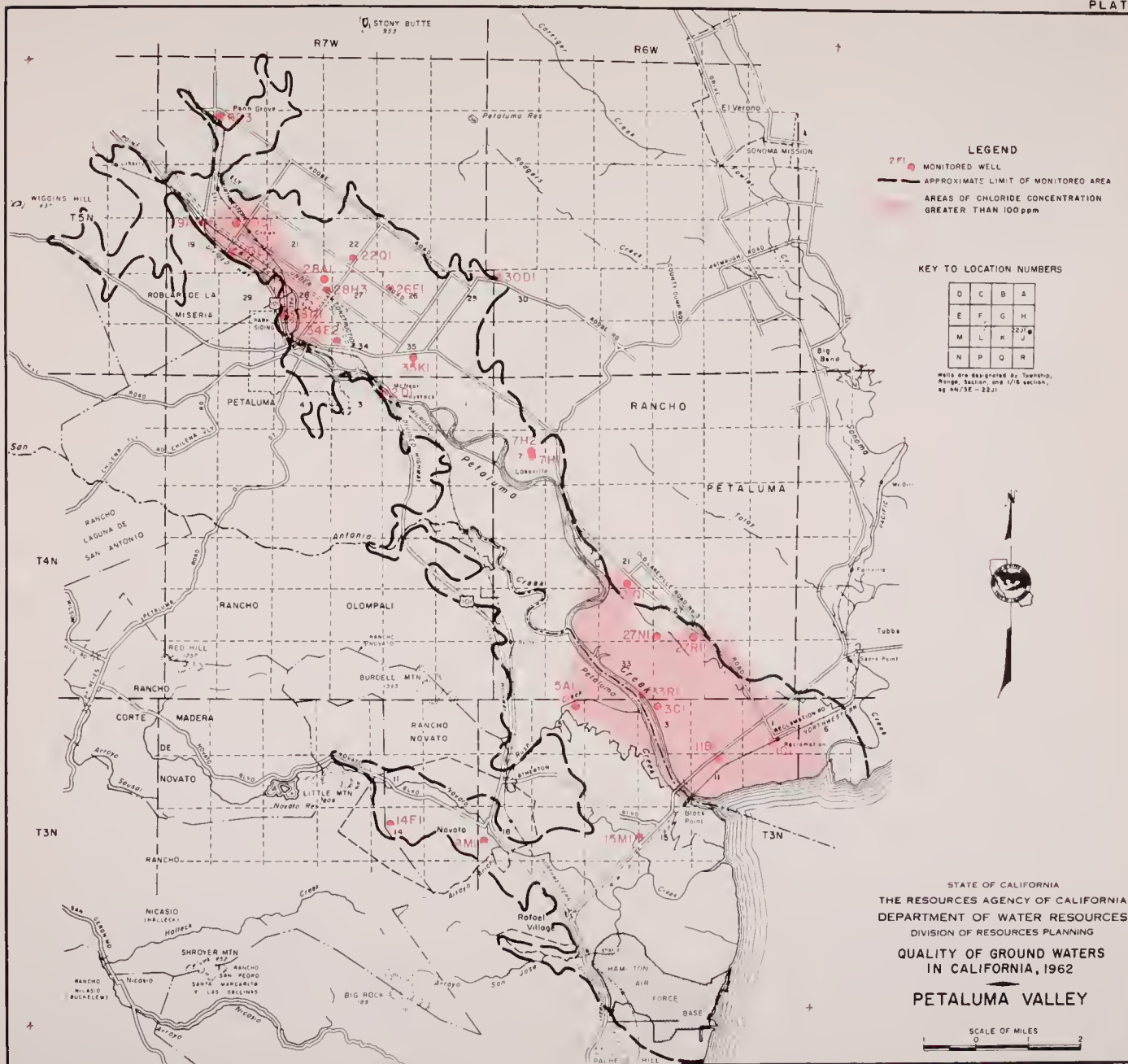


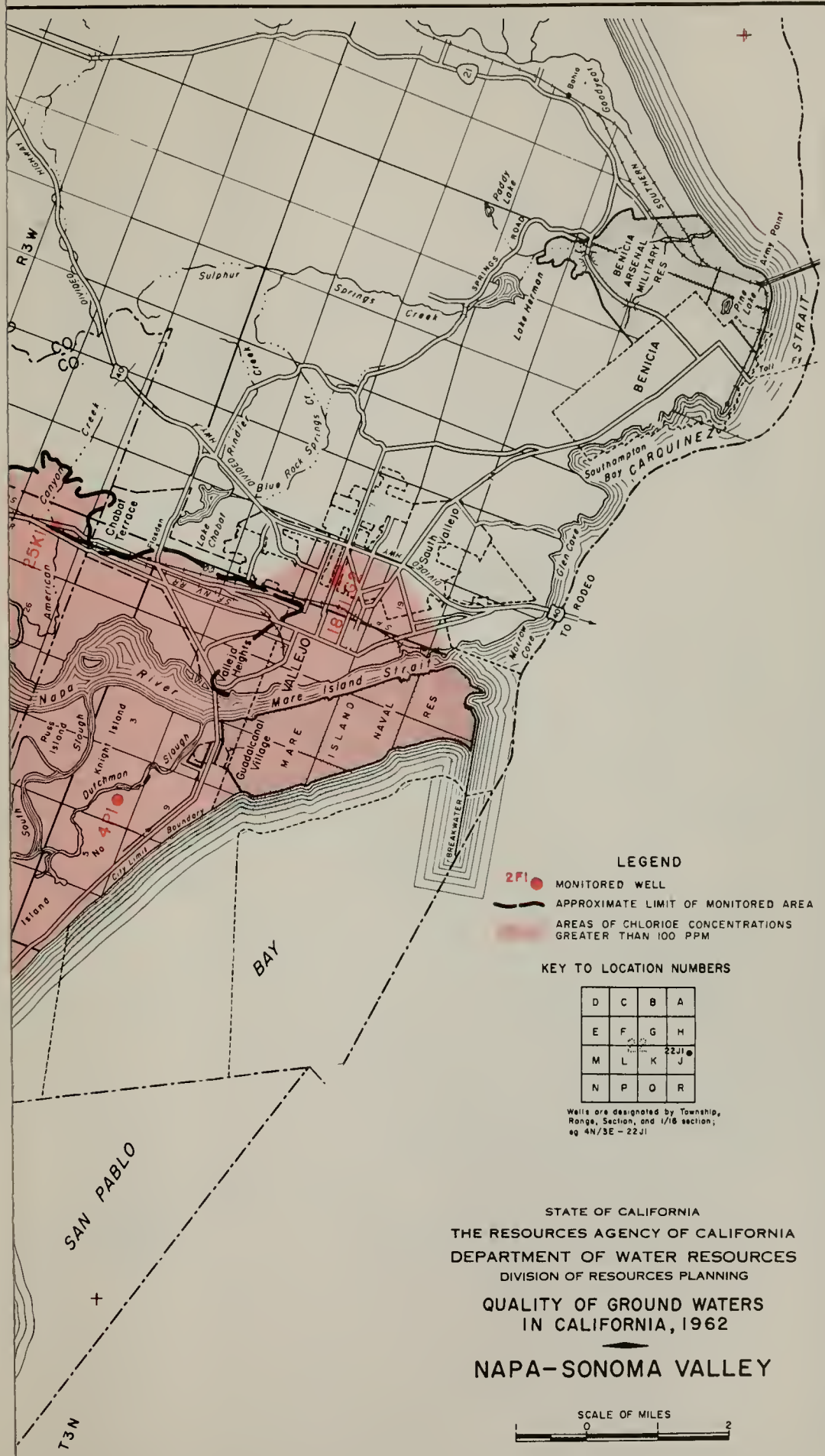
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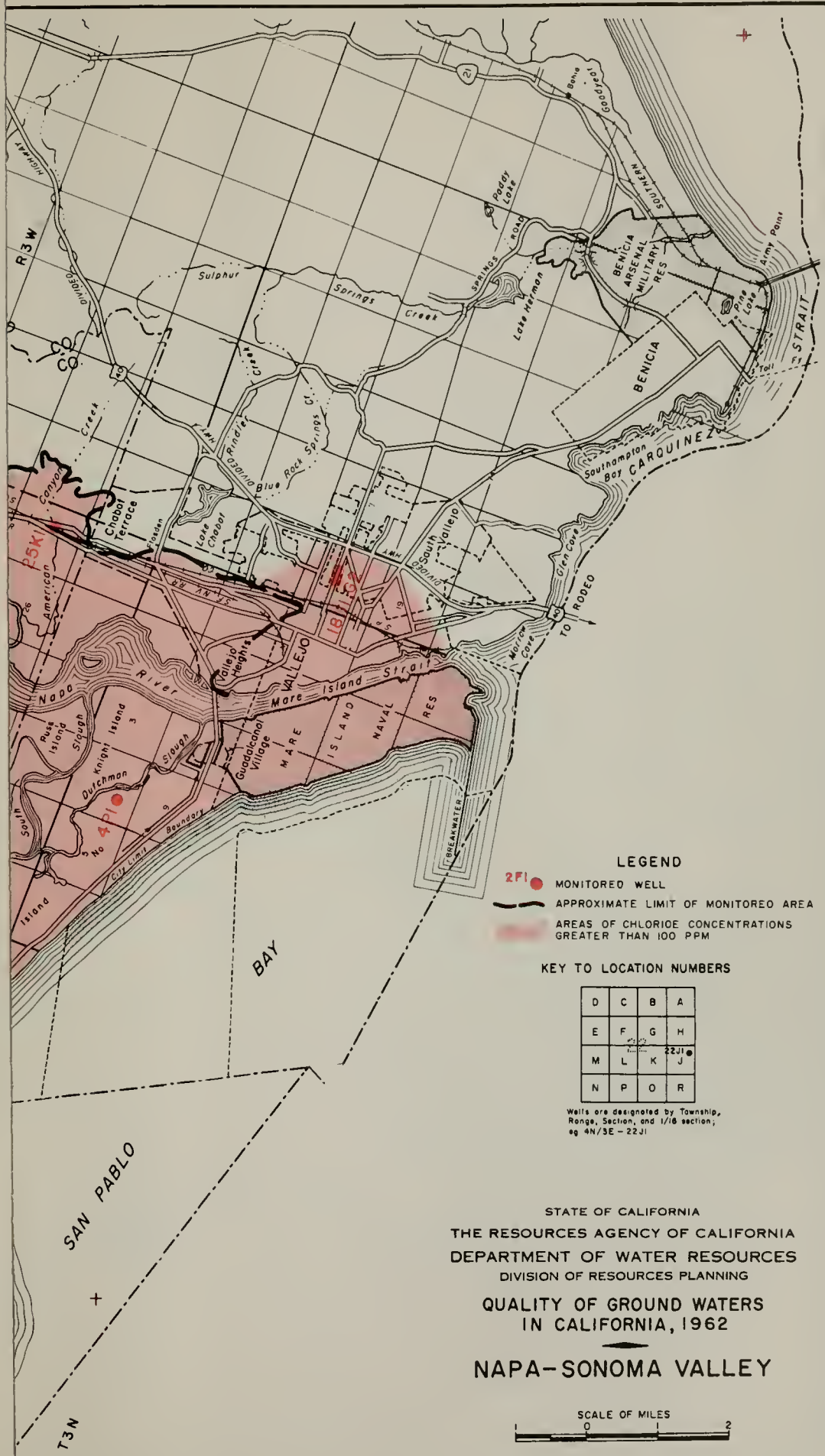
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IN CALIFORNIA, 1962

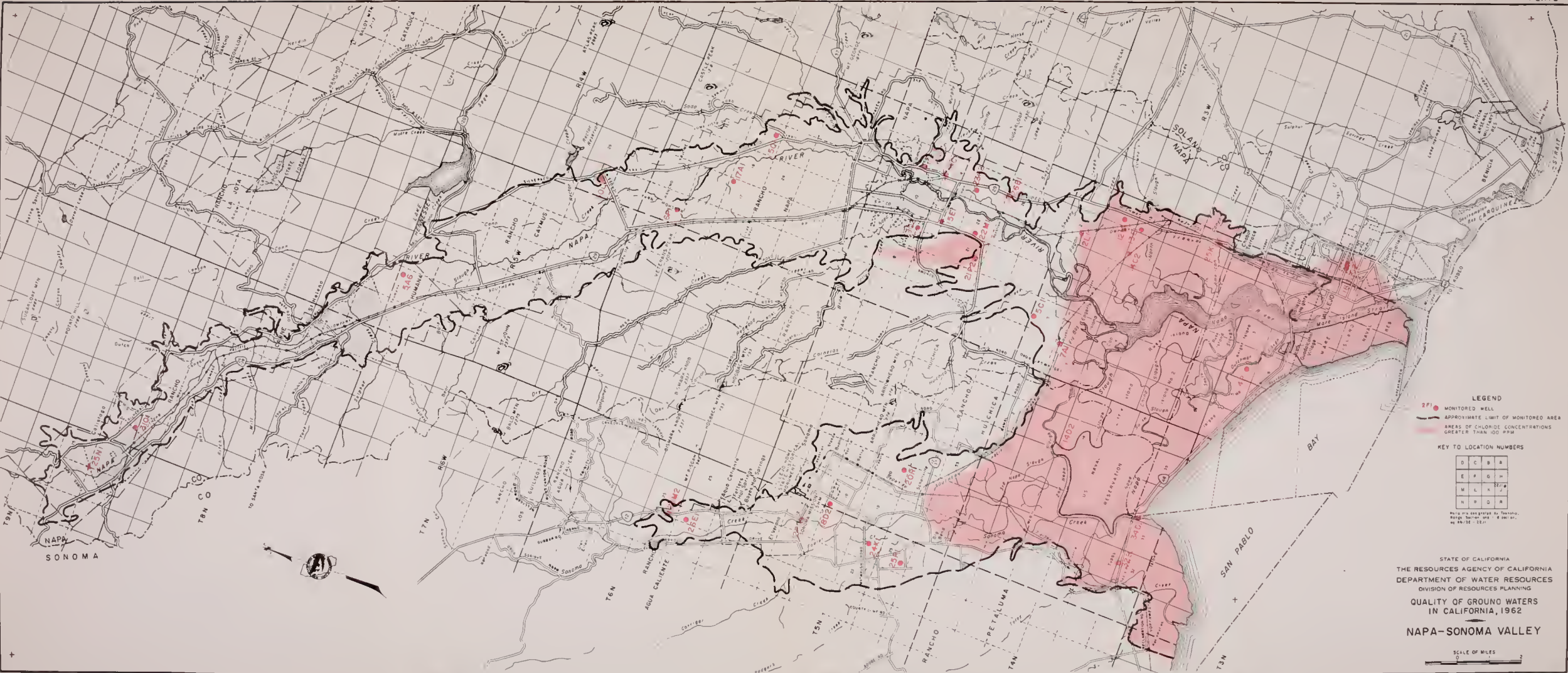
PETALUMA VALLEY











LEGEND

- 271 MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA
- AREAS OF CHLORIDE CONCENTRATIONS GREATER THAN 100 PPM

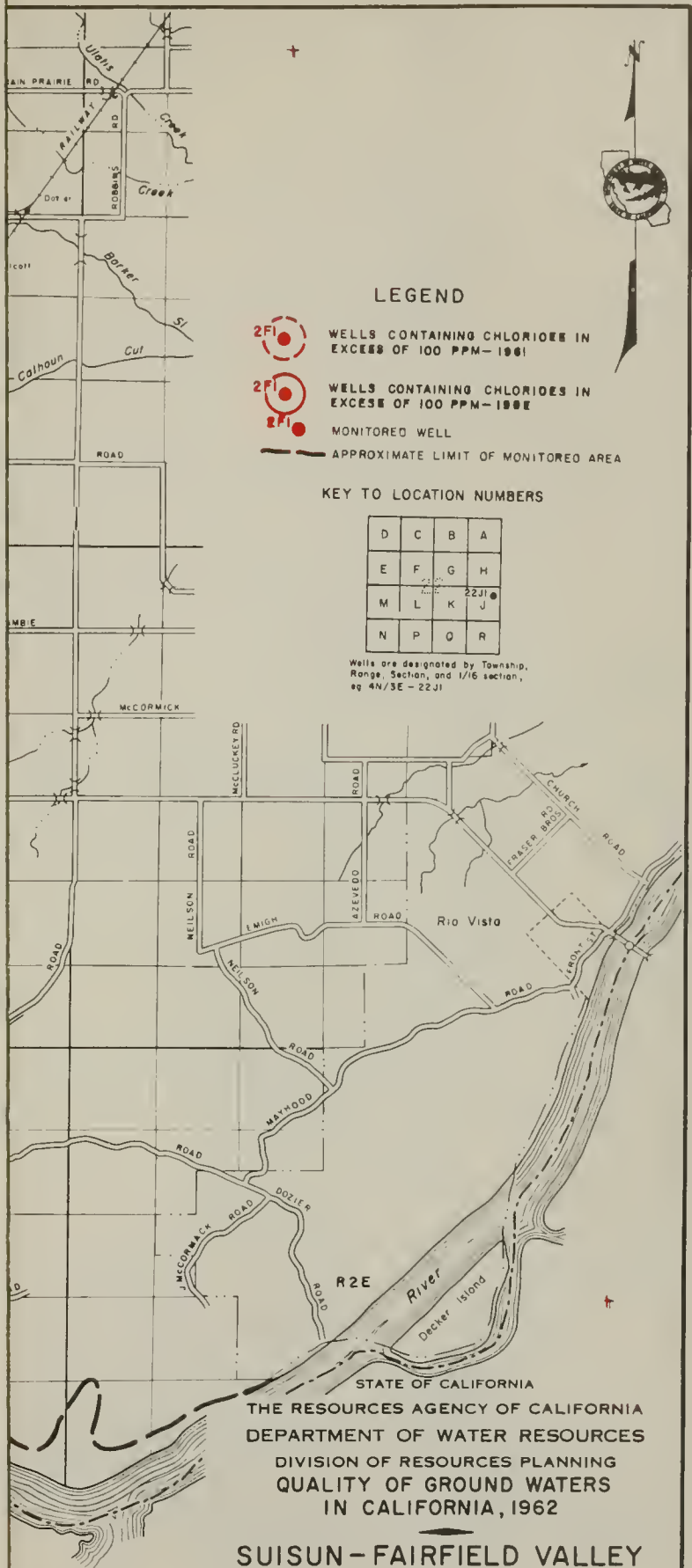
KEY TO LOCATION NUMBERS

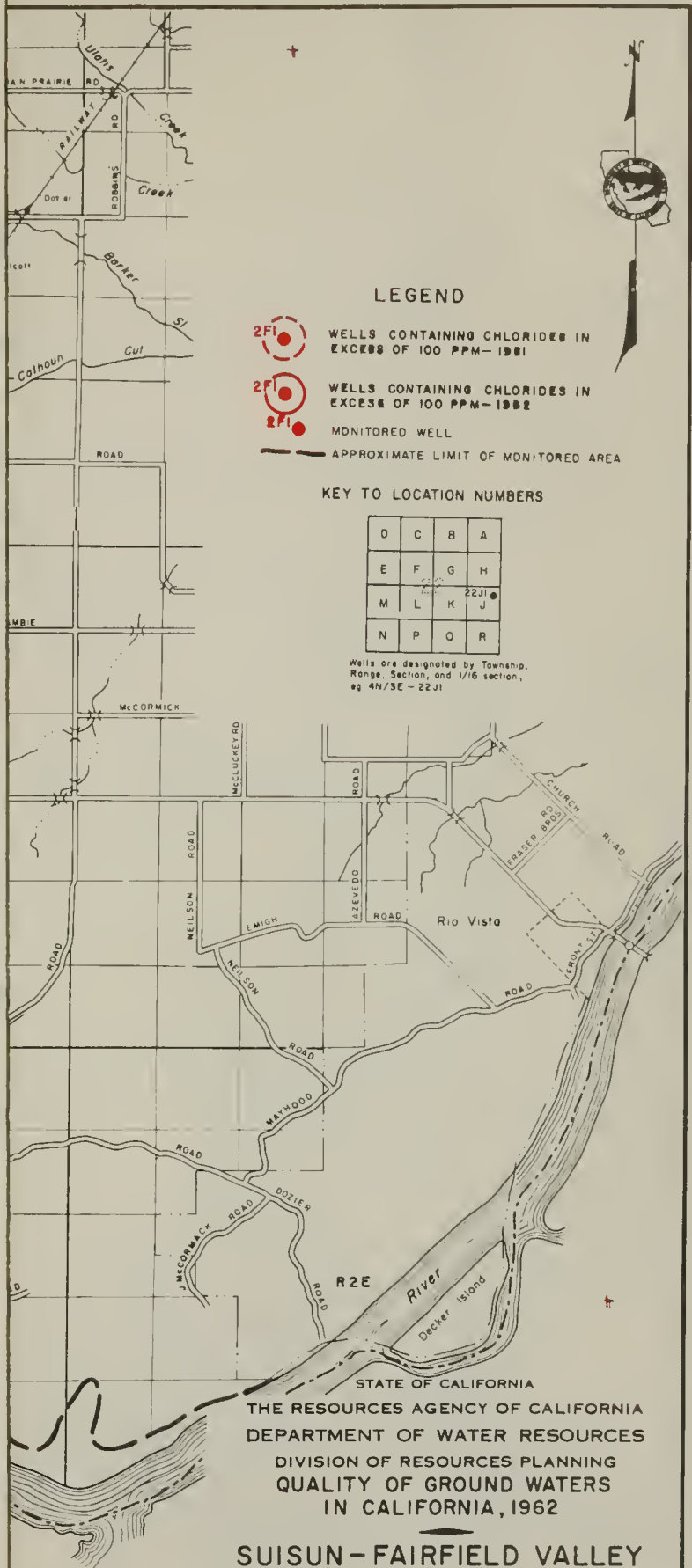
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E	F	G	H
I	J	K	L
M	N	O	P
Q	R	S	T

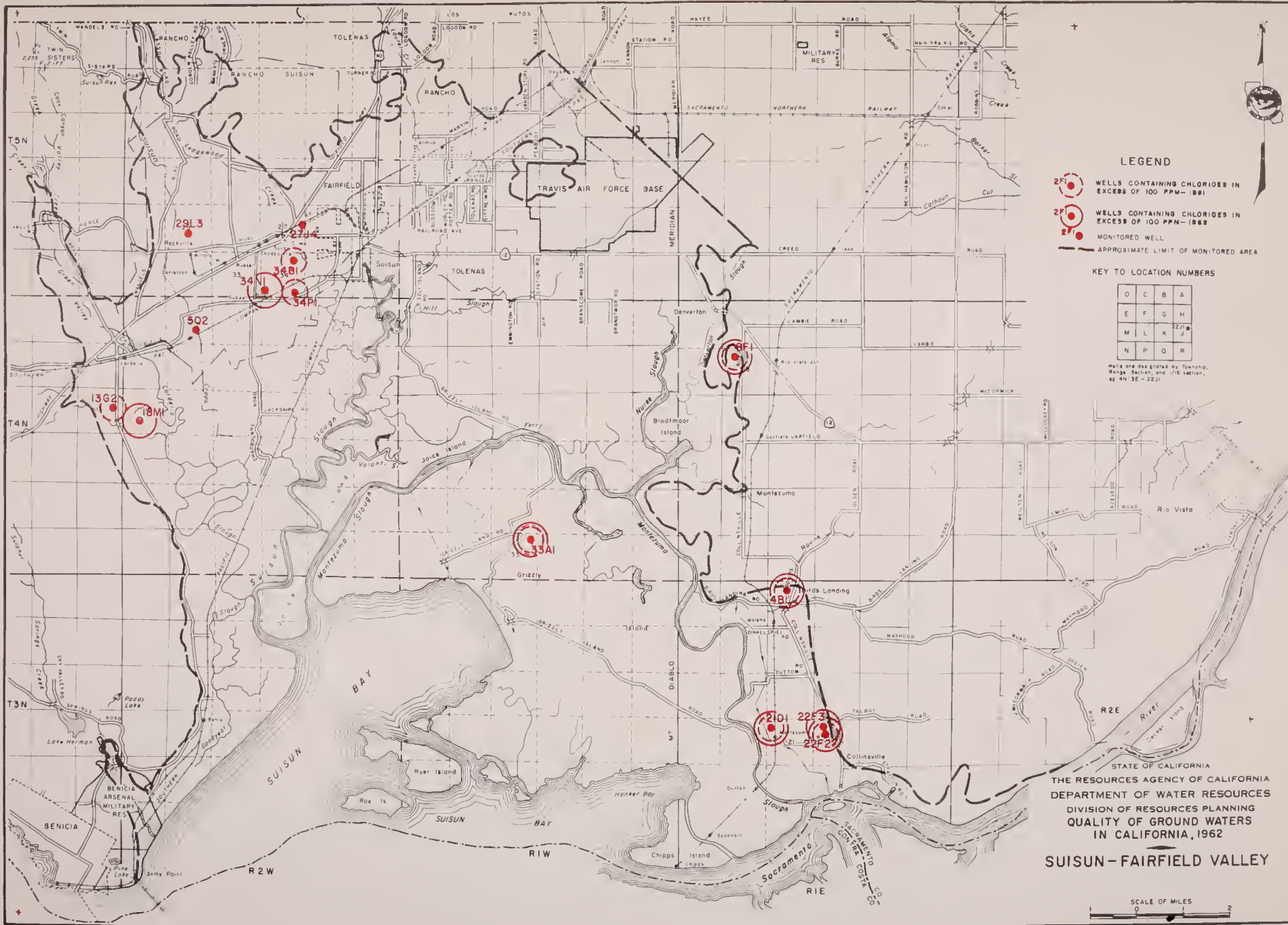
Wells are designated by Township, Range, Section, and Well Number. See also map of the area on page 10 of this report.

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DIVISION OF RESOURCES PLANNING
QUALITY OF GROUNDWATERS
IN CALIFORNIA, 1962
NAPA-SONOMA VALLEY

SCALE OF MILES
0 1 2









SCALE OF MILES



SCALE OF MILES



LEGEND

● MONITORED WELL

--- APPROXIMATE LIMIT OF MONITORED AREA

— LINE OF 350 PARTS PER MILLION CHLORIDE CONCENTRATION

— LINE OF 500 PARTS PER MILLION CHLORIDE CONCENTRATION

— LINE OF 1000 PARTS PER MILLION CHLORIDE CONCENTRATION

KEY TO LOCATION NUMBERS

0	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

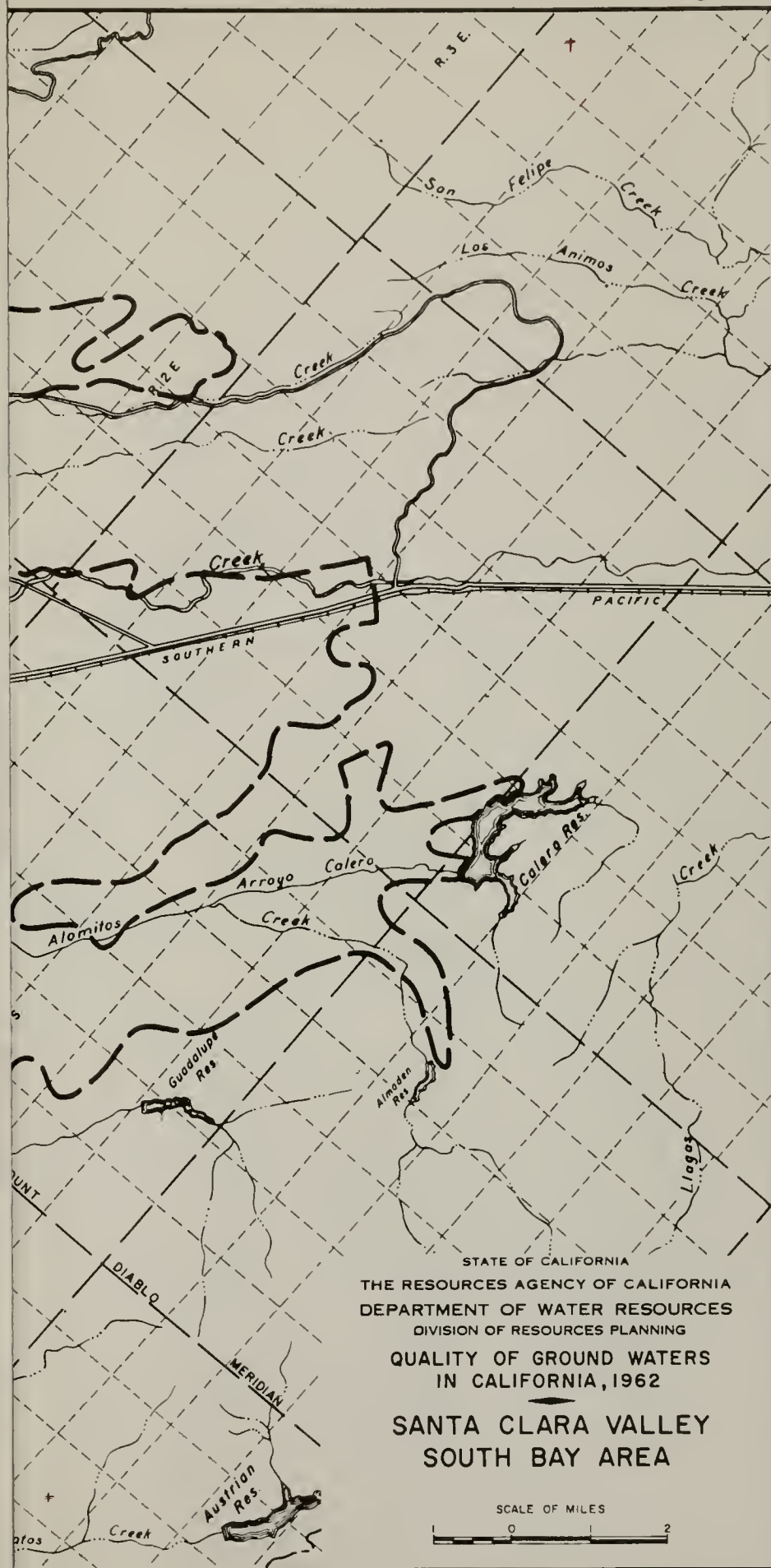
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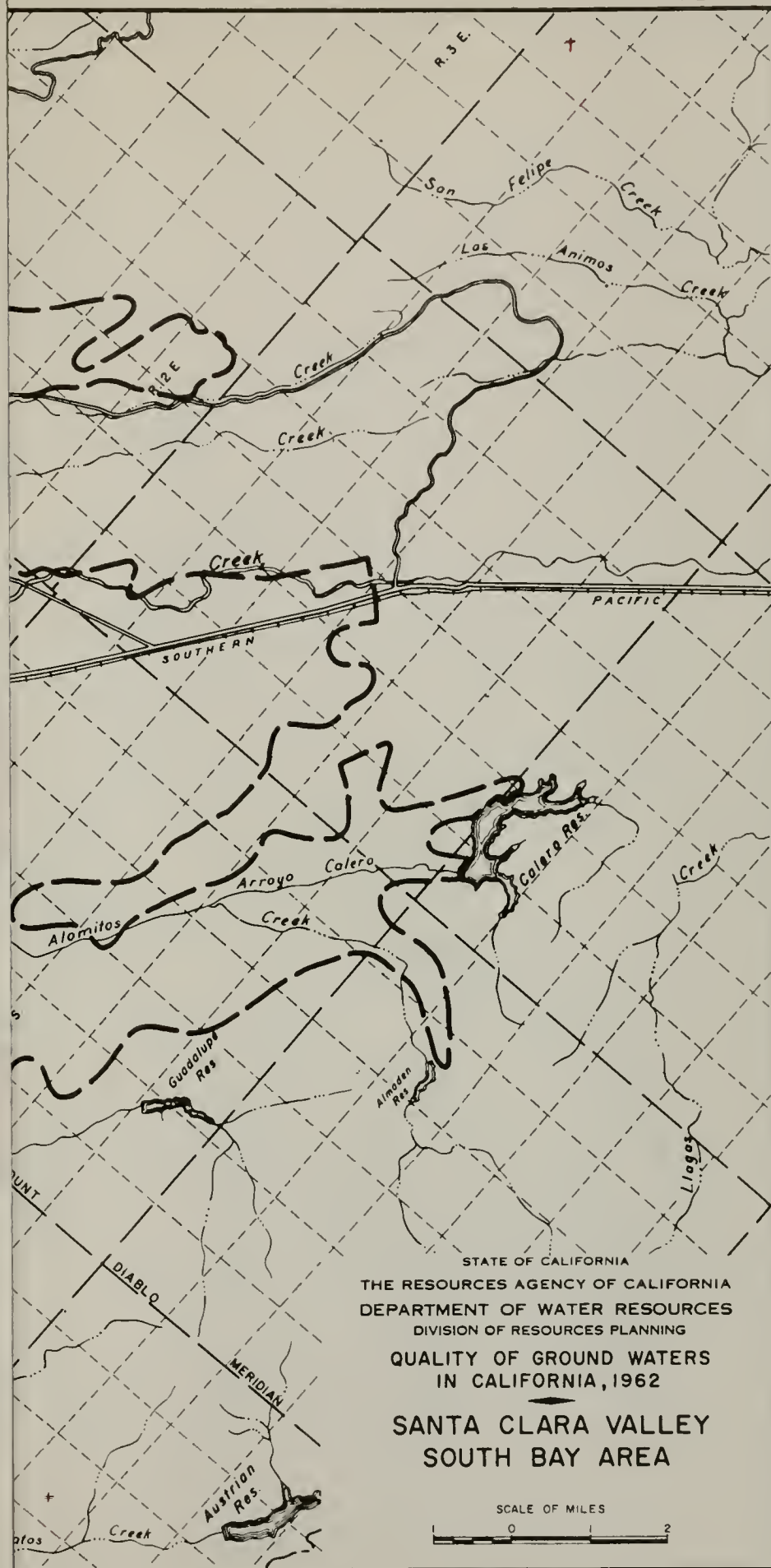
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DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962

SANTA CLARA VALLEY
EAST BAY AREA

SCALE OF MILES
0 1 2



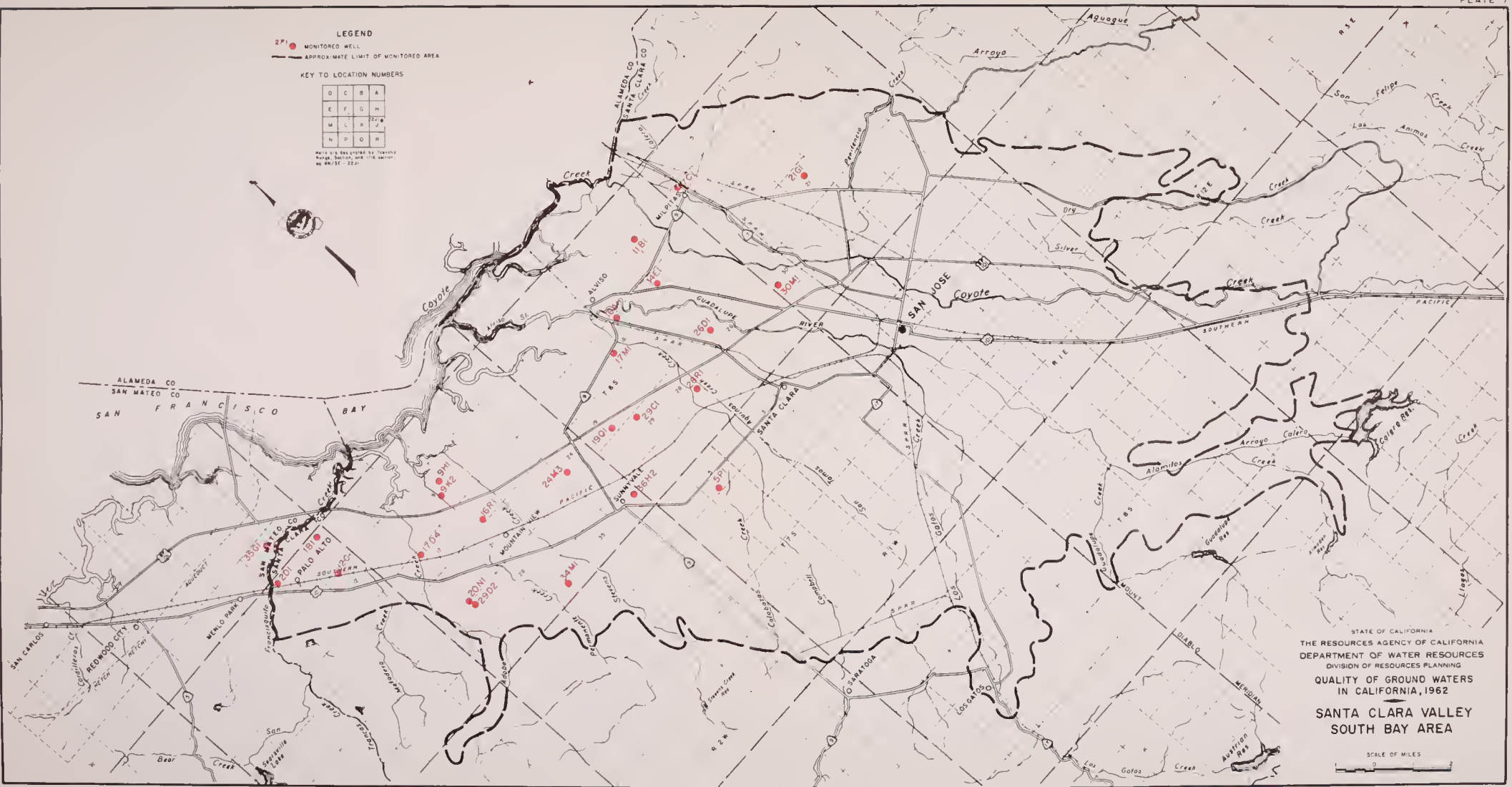


LEGEND
 271 MONITORED WELL
 — APPROXIMATE LIMIT OF MONITORED AREA

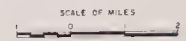
KEY TO LOCATION NUMBERS

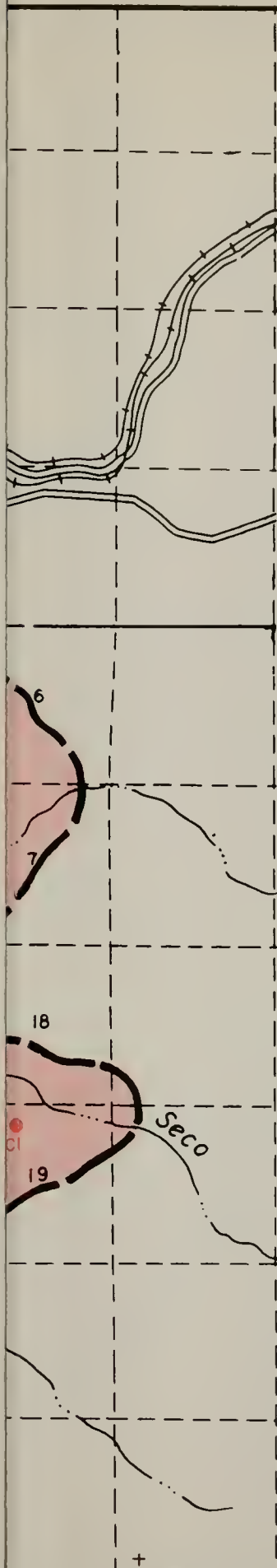
O	C	B	A
E	F	G	H
M	L	K	J
N	P	R	

Map is a reproduction of "Ground Water Resources of the Santa Clara Valley, South Bay Area," by H. J. Smith, 1962.



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 DIVISION OF RESOURCES PLANNING
 QUALITY OF GROUND WATERS
 IN CALIFORNIA, 1962
 SANTA CLARA VALLEY
 SOUTH BAY AREA





LEGEND

- MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA
- AREAS OF BORON CONCENTRATIONS GREATER THAN 0.5 PPM

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	O	R

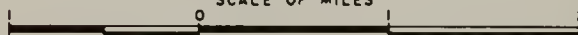
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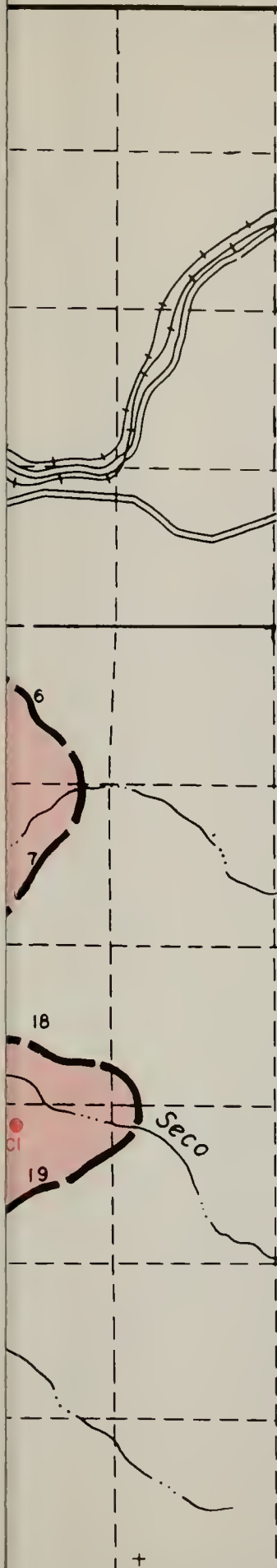
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QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962

LIVERMORE VALLEY

SCALE OF MILES





LEGEND

- MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA
- AREAS OF BORON CONCENTRATIONS GREATER THAN 0.5 P.P.M

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	O	R

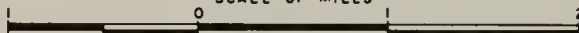
Wells are designated by Township, Range, Section, and 1/4 section, eg 4N/3E - 22J1

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THE RESOURCES AGENCY OF CALIFORNIA
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DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962

LIVERMORE VALLEY

SCALE OF MILES





LEGEND
 MW MONITORED WELL
 — APPROXIMATE LIMIT OF MONITORED AREA
 AREAS OF BORON CONCENTRATIONS
 GREATER THAN 0.5 P.P.M.

KEY TO LOCATION NUMBERS

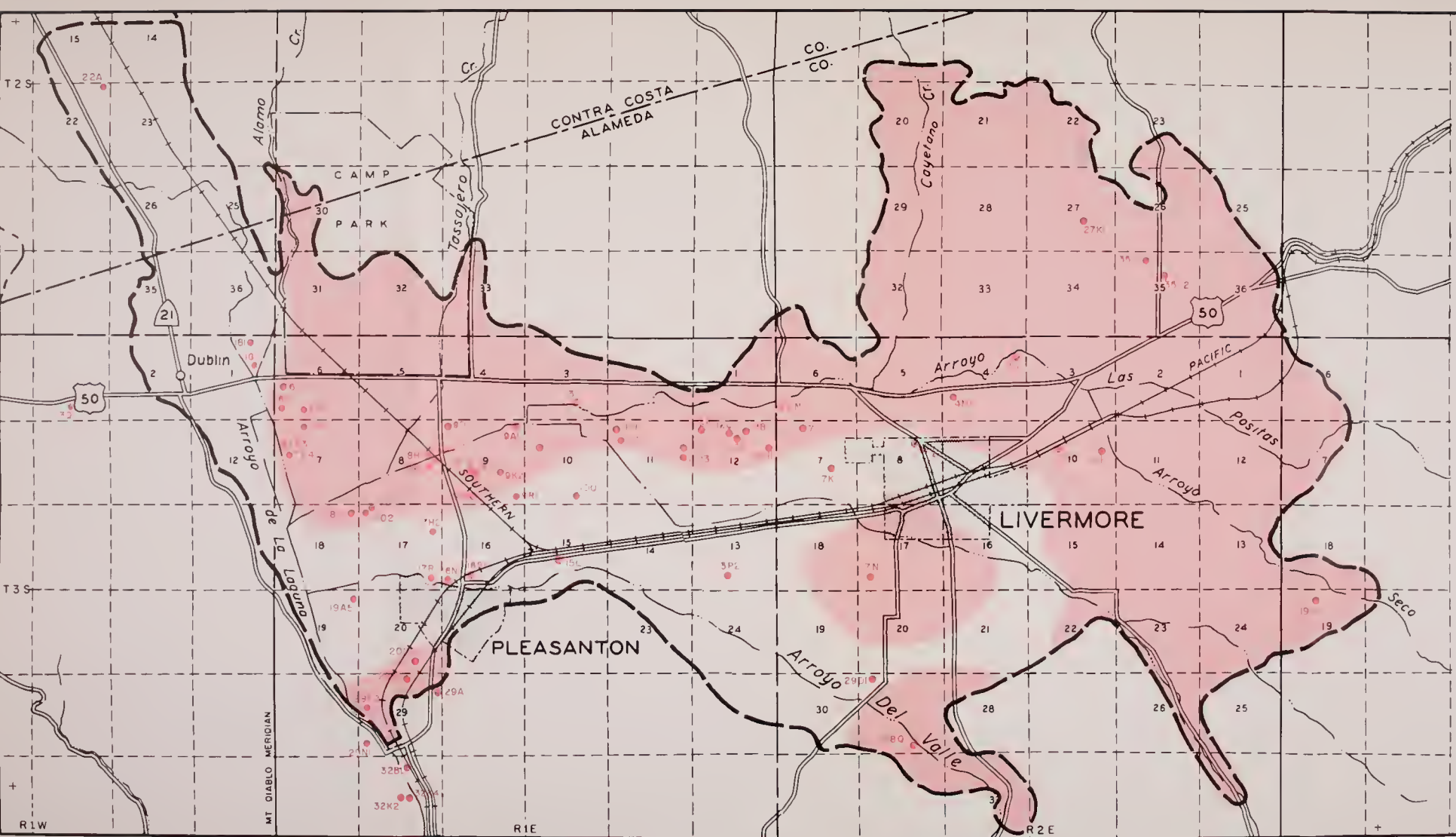
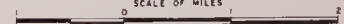
D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

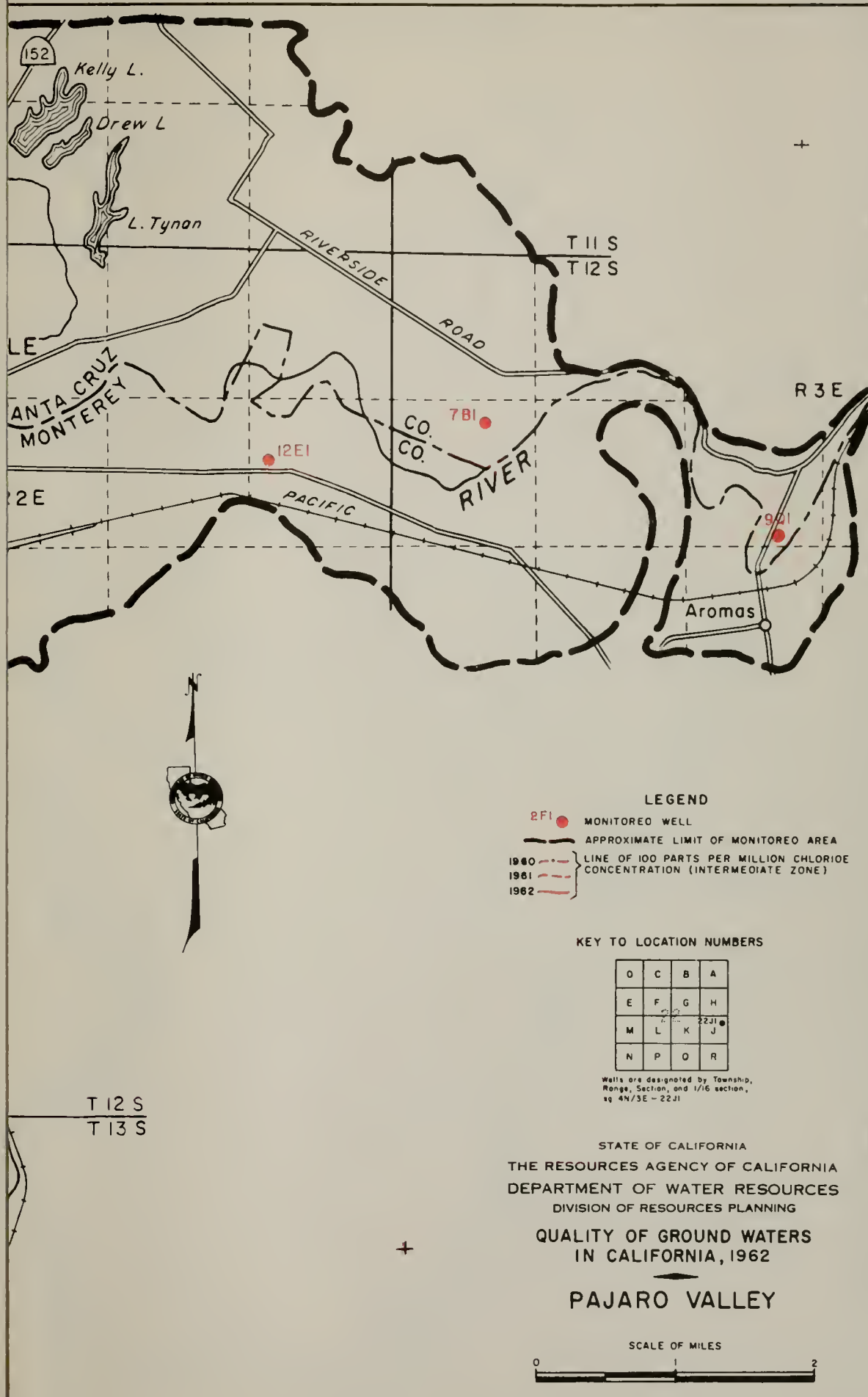
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 QUALITY OF GROUND WATERS
 IN CALIFORNIA, 1962

LIVERMORE VALLEY

SCALE OF MILES







LEGEND

- 2F1 ● MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA
- 1960 — LINE OF 100 PARTS PER MILLION CHLORIDE CONCENTRATION (INTERMEDIATE ZONE)
- 1961 —
- 1962 —

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E - 22J1

T 12 S
T 13 S

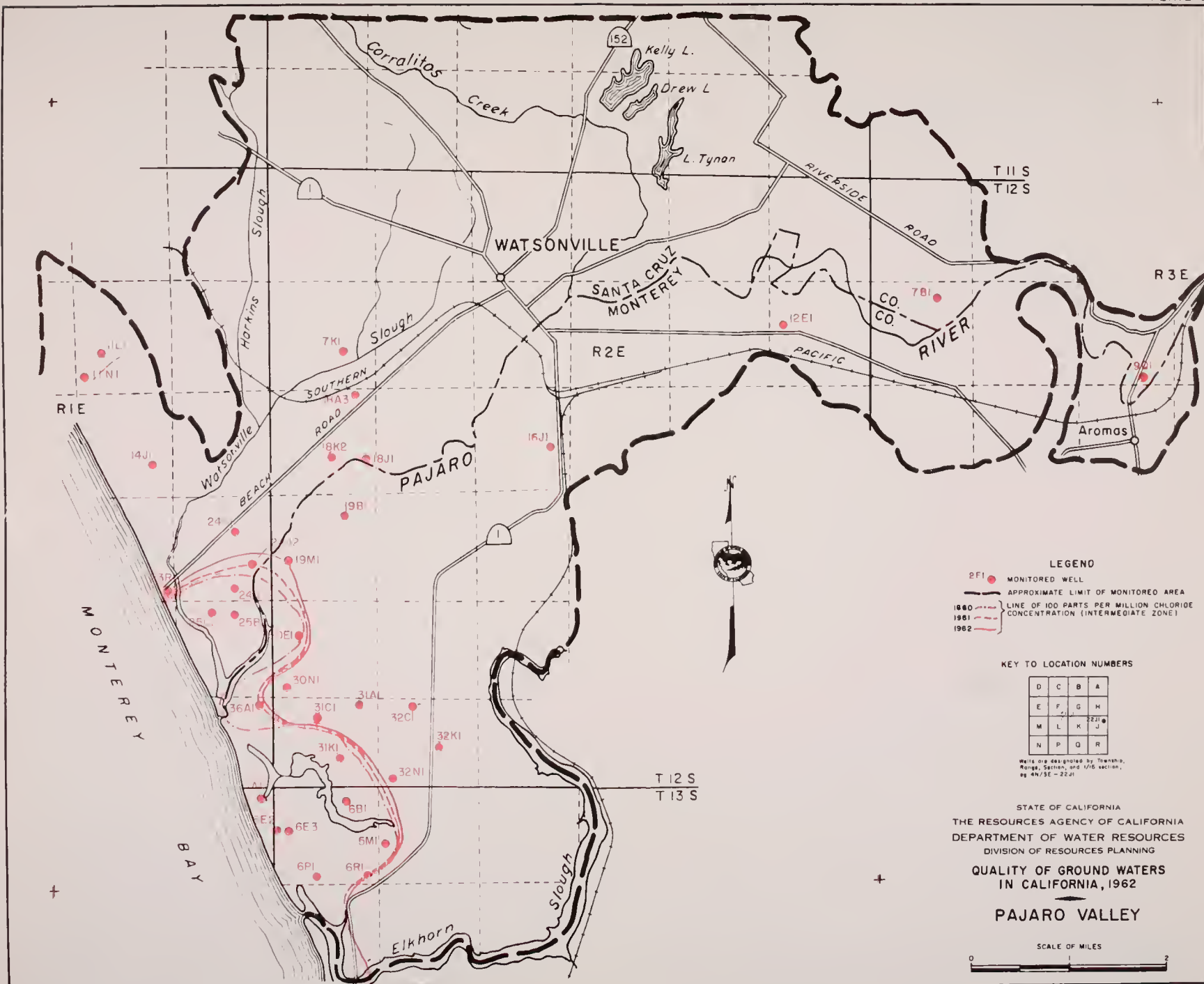
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DIVISION OF RESOURCES PLANNING

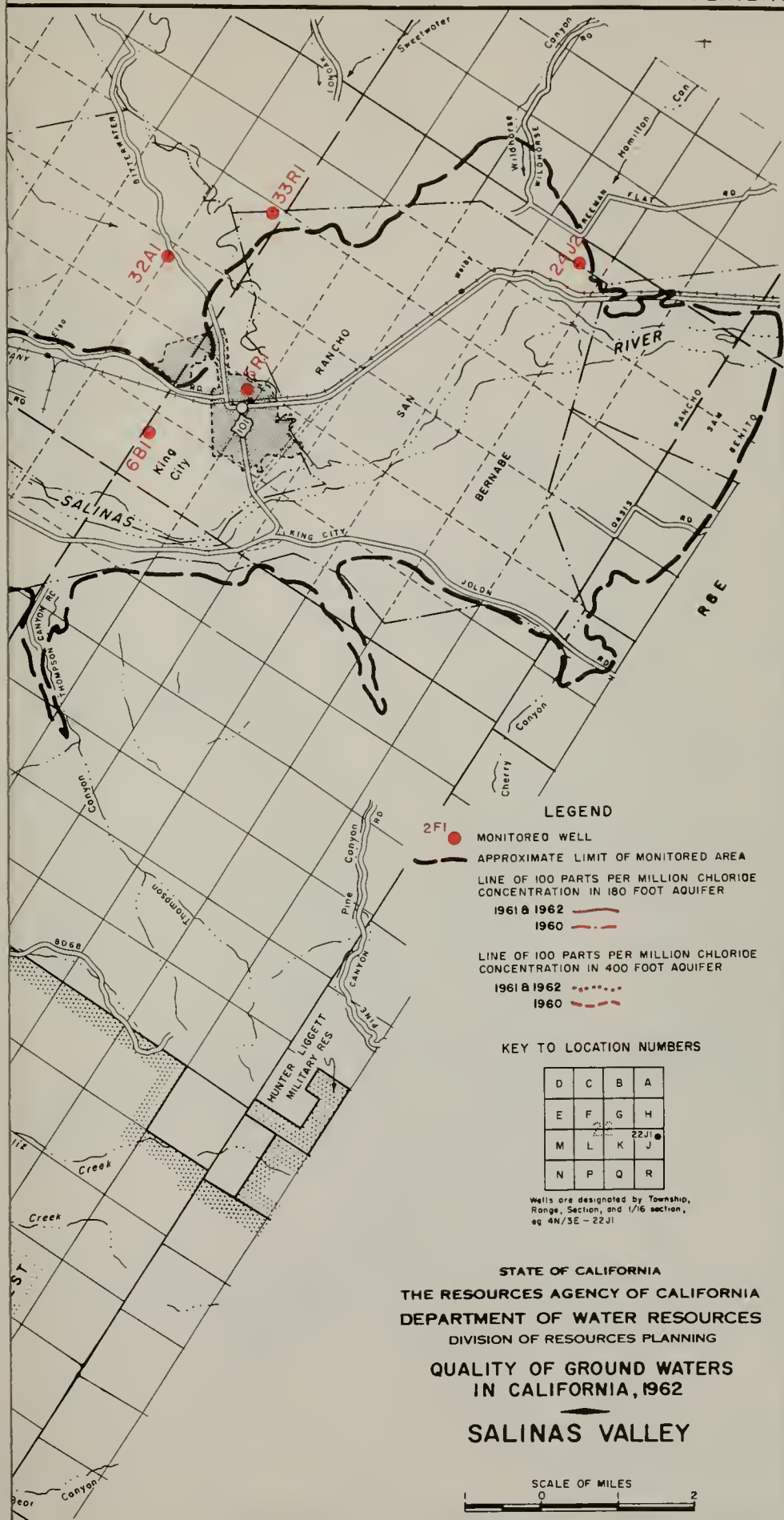
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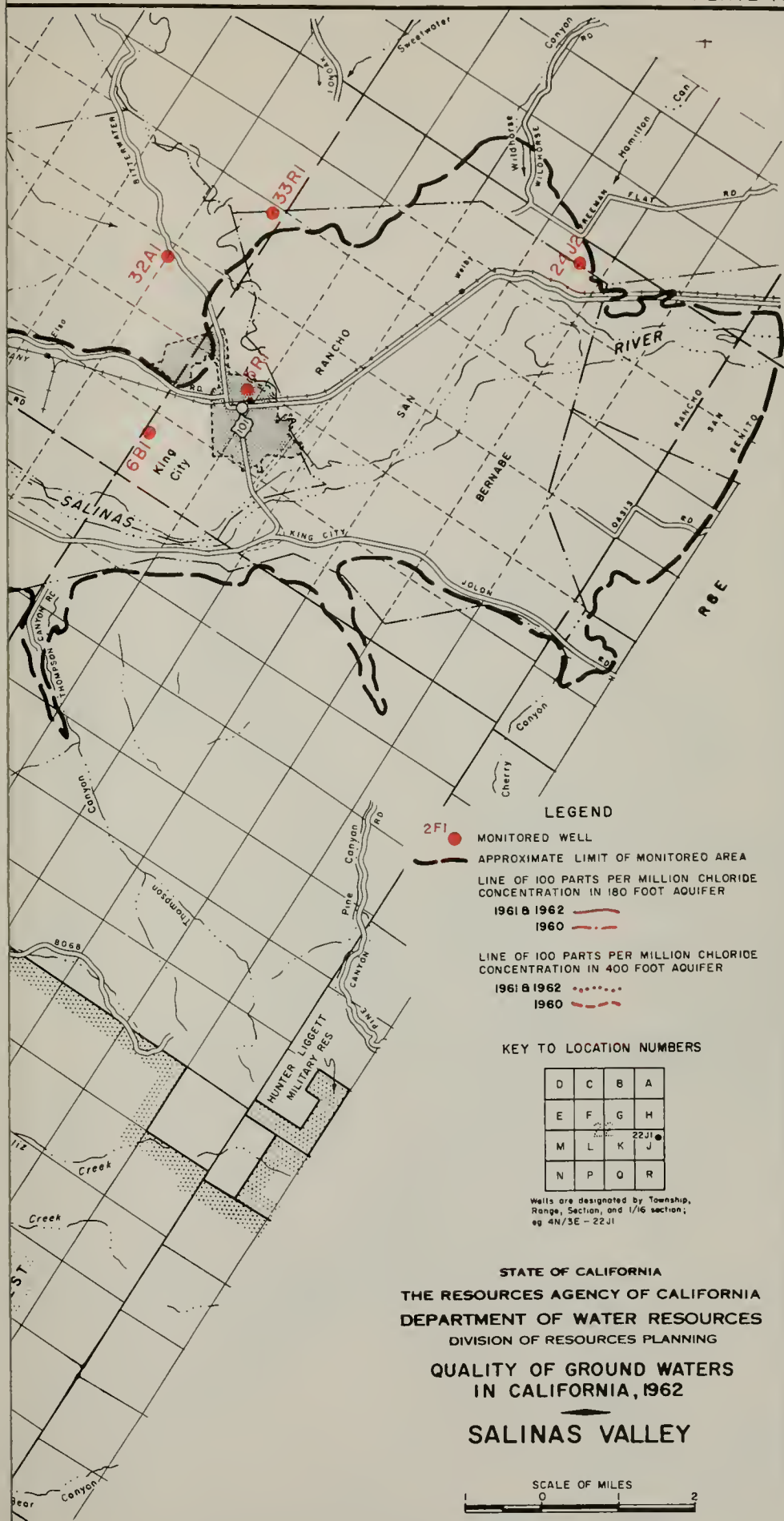
PAJARO VALLEY

SCALE OF MILES

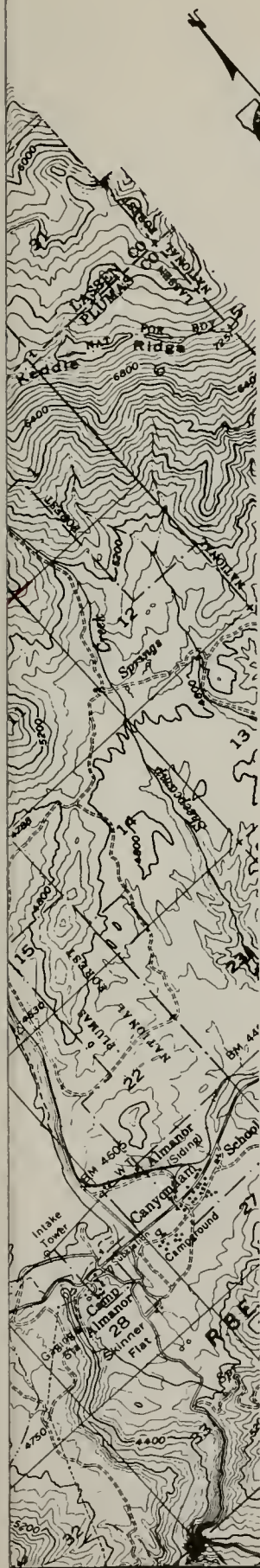












LEGEND



MONITORED WELL



APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section; eg 4N/3E-22J1

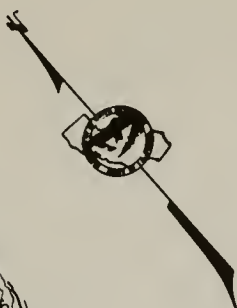
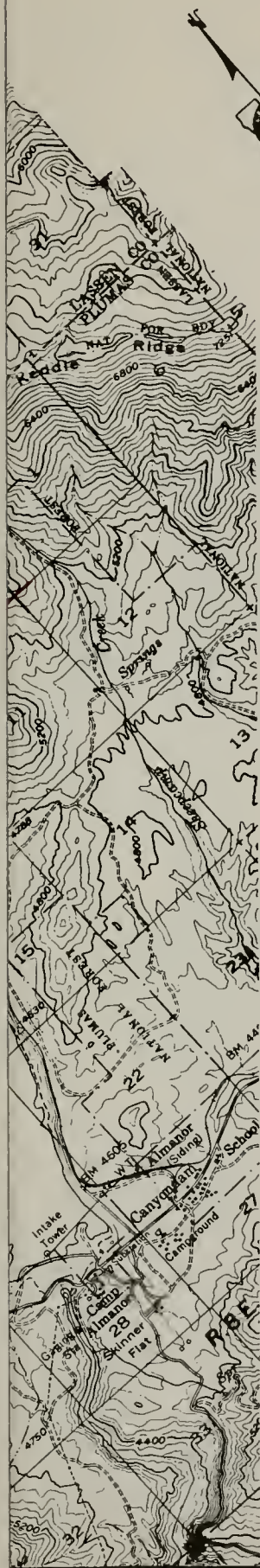
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QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962

ALMANOR VALLEY

SCALE IN MILES





LEGEND



MONITORED WELL



APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section; eg 4N/3E-22J1

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QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962

ALMANOR VALLEY

SCALE IN MILES





LEGEND

- 5N1 MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	O	R

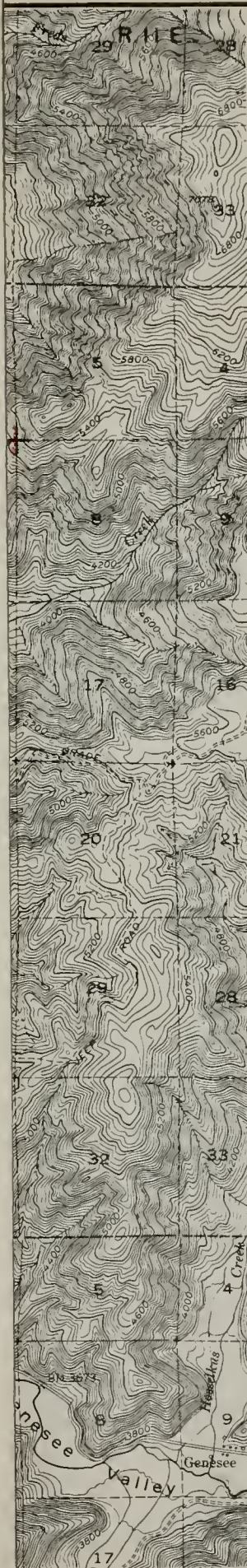
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DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962

ALMANOR VALLEY

SCALE IN MILES
0 1 2



LEGEND

- 4E1 MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

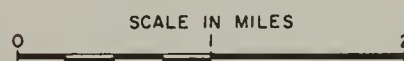
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M	L	K	J
N	P	Q	R

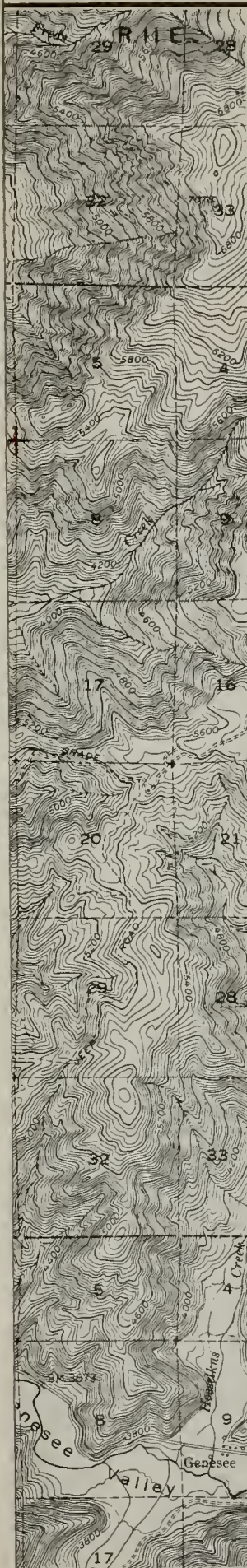
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QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962

INDIAN VALLEY





LEGEND

- 4E1 MONITORED WELL
- — — — — APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section; eg 4N/3E-22J1

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 QUALITY OF GROUND WATERS
 IN CALIFORNIA, 1962
INDIAN VALLEY





LEGEND

- 4E1 MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

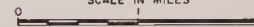
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E	F	G	H
M	L	K	J
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section, eg 4N/3E-22J1

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DIVISION OF RESOURCES PLANNING
QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962

INDIAN VALLEY

SCALE IN MILES





LEGEND

- 8LI MONITORED WELL
 ——— APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

O	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

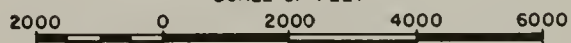
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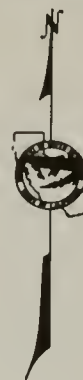
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QUALITY OF GROUND WATERS
 IN CALIFORNIA, 1962

AMERICAN VALLEY

SCALE OF FEET





LEGEND

- 8LI MONITORED WELL
 ——— APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

O	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

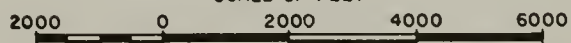
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 DIVISION OF RESOURCES PLANNING

QUALITY OF GROUND WATERS
 IN CALIFORNIA, 1962

AMERICAN VALLEY

SCALE OF FEET





LEGEND

- BLI MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

Q	C	B	A
E	F	G	H
M	L	K	J
N	P	R	

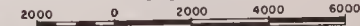
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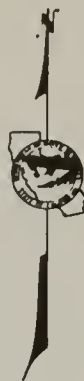
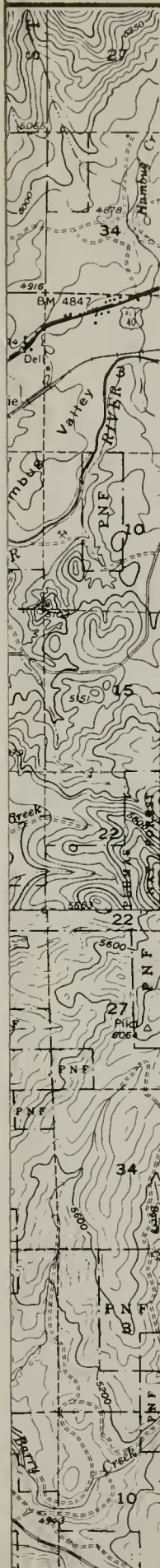
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QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962

AMERICAN VALLEY

SCALE OF FEET





LEGEND

- 9AI MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section; eg 4N/3E-22J1

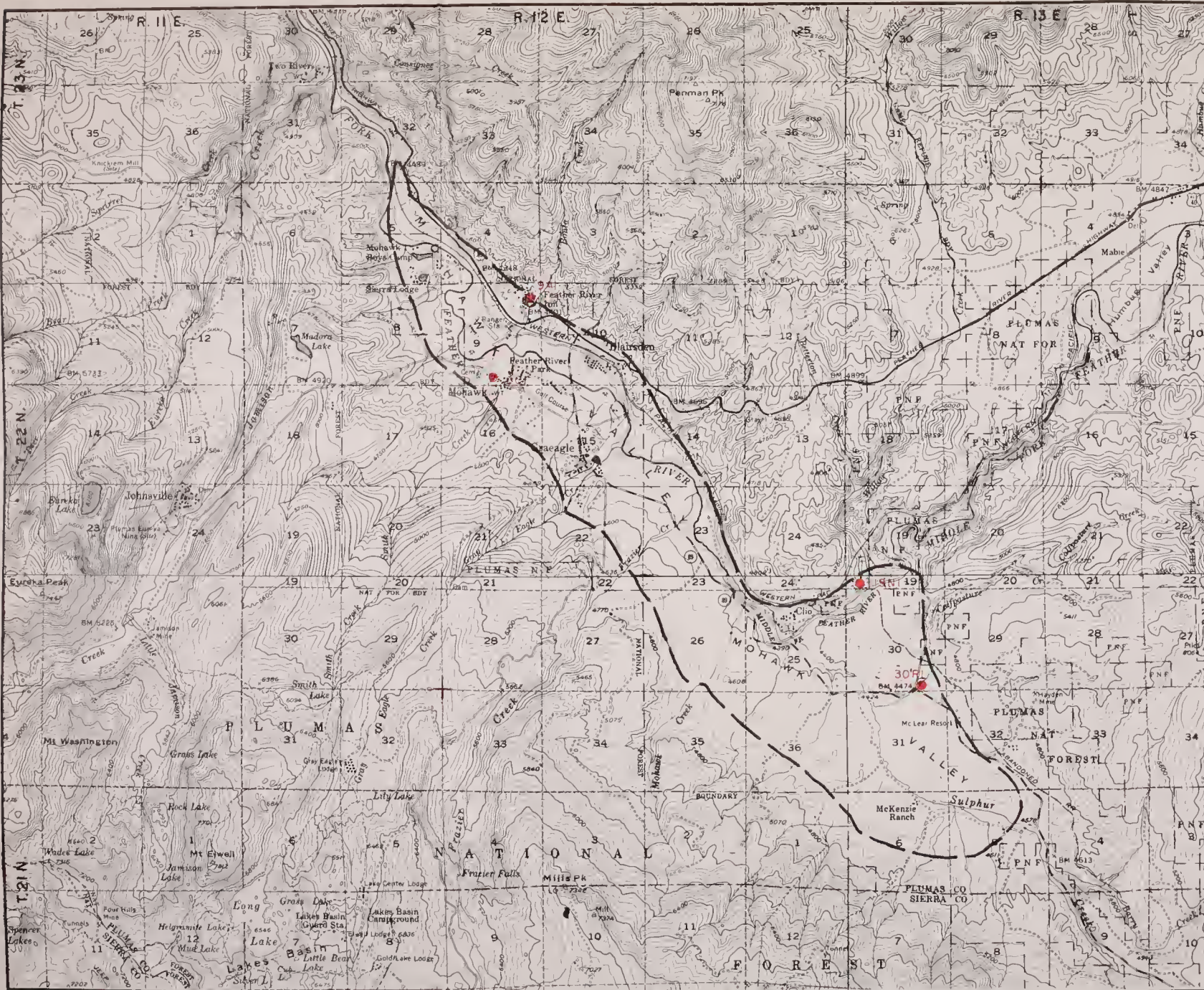
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QUALITY OF GROUND WATERS
IN CALIFORNIA, 1962

MOHAWK VALLEY

SCALE IN MILES





LEGEND

- 9A1 MONITORED WELL
- APPROXIMATE LIMIT OF MONITORED AREA

KEY TO LOCATION NUMBERS

D	C	B	A
E	F	G	H
M	L	K	J
N	P	Q	R

Wells are designated by Township, Range, Section, and 1/16 section; eg 4N/3E-22J1

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IN CALIFORNIA, 1962

MOHAWK VALLEY

SCALE IN MILES



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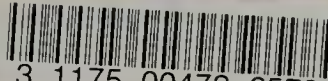
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